

ESSAYING METACOMMUNICATION:
A SURVEY AND CONTEXTUALIZATION OF
COMMUNICATION RESEARCH

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Submitted in partial fulfillment of the
requirements for the Doctor of Philosophy
degree in the School of Education, Indiana
University, Bloomington, Indiana

February, 1978

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This study is dedicated to
Dr. Norman A. McQuown, who
by his example of dedication
to scholarship and teaching
has inspired many of his
students to ask questions
of the world and its peoples.
Dr. Warren D. Stevens, chairman
and much more, shared his wisdom
and allowed me room to grow.
Dr. Ivor K. Davies taught me an
appreciation of British
intellectual incisiveness.
Dr. Ray Birdwhistell first
showed me the richness of
socially patterned behavior.
And my friends, who supplied
endless moral support, and
my family, who gave me the
opportunity to learn at distant
universities -- to all of you,
thank you.

I must also mention the kindness
of the people at the Eastern
Pennsylvania Psychiatric Institute,
who not only allowed me to roam
through their research files
but also gave me training in
research film and videotape
production.

CHAPTER ONE

INTRODUCTION

The level of explanation adopted by a science is a direct consequence of what it decides to regard as black boxes. Often these decisions are implicit; nevertheless this is largely all that separates one scientific discipline from another. Biochemists, physiologists, and psychologists, for example, may sometimes study the same empirical phenomenon. What distinguishes their separate approaches is the assumption they make about the appropriate level of analysis, that is, what they are specifying as systems. (Cleary, 1976, 133)

All social scientists study human behavioral organization. Educational researchers focus upon the behavioral organization of human learning and teaching within the social contexts of educational establishments. This choice of focus, more than the specific theory or methodology, is what distinguishes the eclectic discipline of educational research from other social science disciplines.

In borrowing theoretical constructs and methodological tools from sister fields, however, the educational researcher also, and often with a low level of awareness, borrows their paradigms and world-views -- an entire intellectual framework of assumptions about human nature and social nature and the social scientific enterprise -- which colors and shapes his own study. Failure to examine these implicit assumptions leads to loss of scientific rigor, to misreading of published reports, to inappropriate choices of research strategy, and to an unacknowledged imposition of structure upon the very phenomena being studied.

Two basic intellectual frameworks within which a great deal of scientific research has been conducted have been characterized as "physicalist" and "atomistic" versus "cybernetic", "systemic" and "holistic": the basic opposition is between analysis down to bounded units versus synthesis of interacting and interrelated wholes. The intellectual history of this opposition can be traced back to the arguments of the early Greek philosophers and perhaps even earlier. The split has been embodied in more recent oppositions of the experimental natural sciences to the descriptive social sciences, or the rational opposed to the romantic, or the cognitive opposed to the expressive, and even in the verbal opposed to the nonverbal. Note that our language forces us to move from distinction to opposition, while in fact these two basic frameworks have coexisted and dialectically interacted for thousands of years in the West.

Two paradigms of communication research reflect these basic orientations. One, which I call the "psychological", assumes a world of individual senders and receivers of individual messages, a world in which the message sent by A causes receiver B to respond and in turn send a message to A who in turn responds until the end of the encounter. A second, which I call the "social", assumes a universe of hierarchically interrelated systems of behavior which change through time in non-simple ways and which have been described in studies of language, culture, and personality. The first paradigm leads to quantitative, experimental analysis of variables, while the second leads to more qualitative descriptions of regularities as patterns.

The "psychological" paradigm implies certain assumptions about the nature of communication; this communication about communication, or "metacommunication", is rarely made explicit in reported studies. The biological individual human and the message observable as speech or writing or encoded through another medium are taken as "real" units which can be measured and manipulated in experiments. The communication process, in this view, consists of the sending of a piece of information encoded into a physical message from one individual to another.

The "social" paradigm entails a different metacommunicational set. In this view, a social group of animals or humans is the basic unit, but it is the relationships among members of the group rather than the individuals composing it which are of interest. This network of relationships is seen as a system with components of message subsystems. As information flows through the group (and between the group and its social, biological, and physical environments), communication is engaged in, in a complex but nonrandom way.

The first section of this study describes the "psychological" and the "social" paradigms of communication research in fuller detail. The second section explores one interdisciplinary study¹ of human communication conducted within the "social" approach. The third section presents my own limited research, tentative conclusions, and implications for other communicational and educational researchers.

1. The Natural History of an Interview.

1. The Problem.

My general problem was that of adequately describing and constructing theories of human social communication as a unified system of verbal and nonverbal components. An examination of the communication research literature revealed that the vast array of studies, theories, models, definitions, and strategies of communication research could be seen as resulting from two basic paradigms, which I labeled the "psychological" and the "social" paradigms. In order to determine the boundaries of the phenomena studied, I had to examine as much of the literature of animal communication, ethology, ethnomethodology, social psychology, sociology, philosophy of science, social science, and related fields as possible in a limited time. I was unable to develop a definition of communication, theoretical construct, or research methodology with which I could be satisfied enough to enter into the research phase. Eventually I realized that the problem was not so much the great diversity and looseness of communication research as an interdisciplinary field, as the influence of the basic assumptions made about communication -- the researcher's metacommunicational belief system -- which determined the course of the studies. A definition, theory, and strategy appropriate to one metacommunicational set would be ludicrous to a communication researcher starting with another metacommunicational set.

I set myself the specific problem of making the metacommunicational assumptions of the "psychological" and the "social" paradigms explicit, with the related problem of showing how the assumptions correlated with particular definitions, models, theories, and research strategies. Work on this phase of the study was conducted at Indiana University.

I developed a more specific problem at the University of Chicago, where I had the opportunity to study not only linguistics but also the interdisciplinary research study called The Natural History of an Interview, used as the text of a course in "Interview Analysis" taught by Dr. Norman McQuown. I was fortunate enough to have access to the film and audio tape materials, a professional tape recorder, and a PerceptoScope analysis projector in addition to the printed materials and attempted, under Dr. McQuown's tutelage, to master both the conceptual and the methodological aspects of the NHI in order to conduct research following this model on my own. I formulated my problem as one of not only making the assumptions of the NHI study explicit but also describing the methodology in detail so that future researchers might be able to apply it in their own work. In addition, I hoped to use the NHI study as a window onto human social communication represented by an interview.

My problem, then, is not the question of the nature of human social communication. The problem of this study is this metacommunicational question:

What do the assumptions and methodologies of the "psychological" and "social" paradigms, and, within the "social" paradigm, of the "natural history" approach, allow us to comprehend of human social communication?

The
Problem

2. Rationale for the study.

Education, as the institutionalized teaching and learning of particular kinds of information involving selected groups of teachers and learners, is necessarily both communicational and social. The flow of information from teachers to learners is basic to the educational process. Educational research, then, is related to both communication research and social science. Education could be considered one of the fields of applied communication, along with the fields of rhetoric, mass media communications, psychotherapy, artistic performance, and dissemination of information to the public.

Educational researchers typically assume the "psychological" paradigm of communication research when they posit the teacher as sender; the student as individual receiver or his equivalent, the class treated as a homogeneous group; the message as a small body of information about some subject; and the process of communication as the transmission of that message from teacher to learner. Educational media researchers who replace the human teacher with an instructional film, videotape, or multimedia kit retain the essential sender-message-receiver and one-way information transmission assumptions. These assumptions proved useful when classroom organization consisted of a teacher who lectured and students who listened, took notes, and gave evidence of their retention of the information on tests. The relationship of teacher and learner could be thought of as if it were a relationship between two individuals, with one possessing knowledge and one lacking that knowledge.

In recent years, however, there has been a shift from the teacher-centered classroom to a learner-centered organization and from the view of students as passive recipients of the teacher-selected and -presented information to a view of students as active and self-motivated learners who benefit from rich environments and multiple sources of material encoded in various media. Gorman contrasted the two forms of classroom organization as follows:

A traditional teaching pattern can be characterized as teacher centered, group paced, and offering limited options. An instructional management pattern can be characterized as learner centered, individually paced, and offering multiple options.
(Gorman 1975, 25)

The organizational shift from teacher lecture to individualized instruction and media centers has been accompanied by a conceptual shift, from teaching methods to learning systems. The manager of a learning system first states the learning objectives and then works backward from these general objectives to learner tasks described as specific learner behaviors. In addition, the tasks and objectives are considered as part of a system within which physical environment and social organization also influence student behaviors and when properly designed shape behaviors in the desired ways. The manager's choices, when designing such a learning system, constrain all other choices. Thus the thirteen steps of the flow chart in Figure I-1 are interconnected rather than presented in linear order. The inter-related variables of a learning system, in this new conceptualization, replace the simple triad of teacher-sender, message-information, and student-receiver in the traditional conceptualization of the classroom.

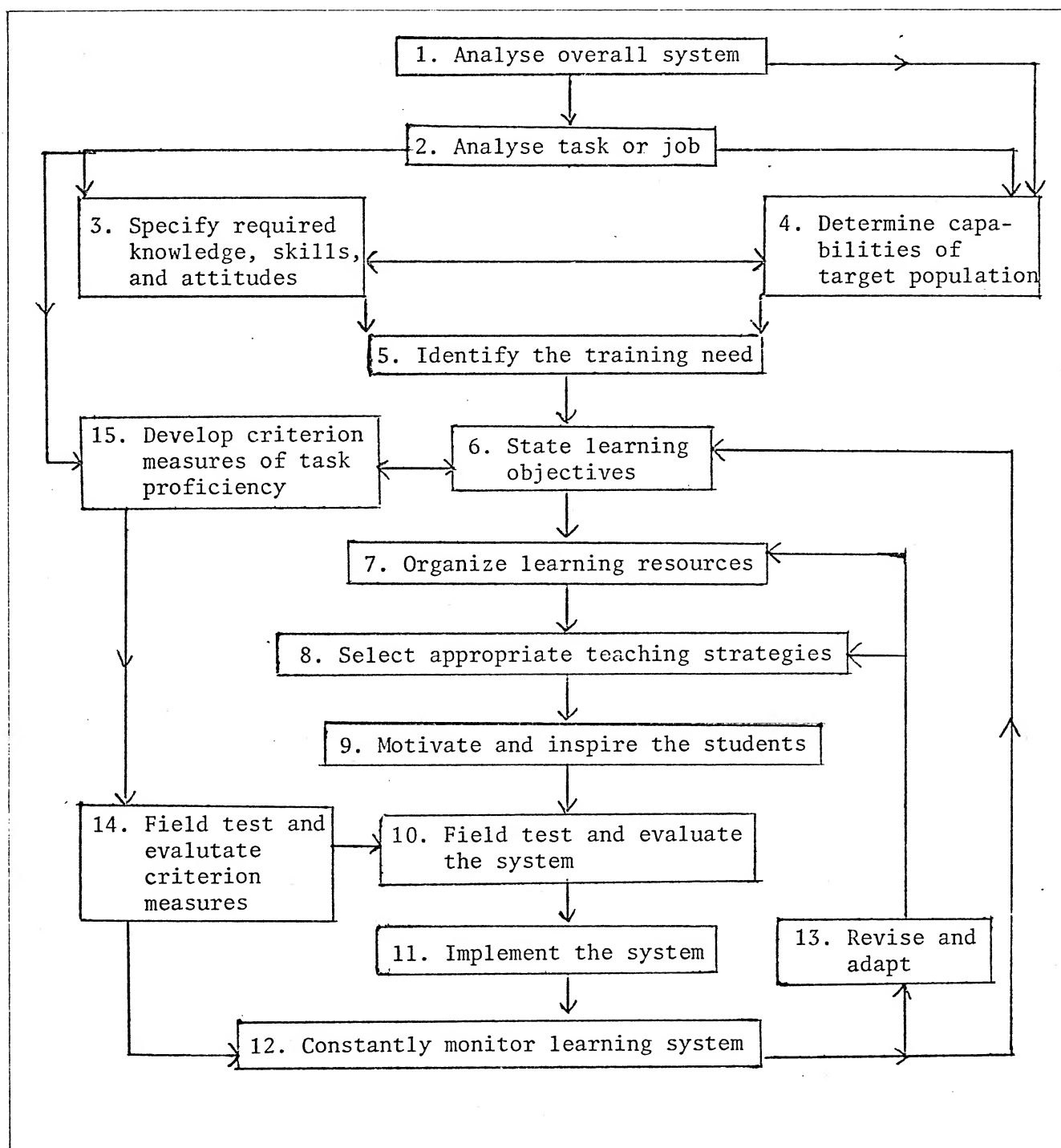


FIGURE I-1. Steps involved in developing a learning system.
(I Davies 1973, 28)

Educational researchers have started to change their orientations as well. Rather than the study of teacher variables, message variables, and student variables, educational researchers must now describe complex multivariate interactions. Uprichard lists the variables relevant to research in instruction as follows:

- Learner variables such as age,sex,intelligence, ethnic group membership, and a set of socio-emotional variables including personality types, motivation, and emotions
- Learner entering behavior variables, such as cognitive, affective, and psychomotor variables
- Teacher variables, such as teacher sex,age, and so on, and a set of socio/emotional variables
- Teacher entering behavior variables in cognitive, affective, and psychomotor realms
- School and classroom organizational variables, such as class size, environmental design ("open" classroom, etc.), teacher organization (team teaching, etc.), and learner organization (kinds of groupings, etc.)
- Demographic variables, such as the economic, political, and social contexts of the school
- Educational objective variables in the cognitive, affective, and psychomotor realms
- Instructional method variables such as lecture, discovery
- Functional analysis of classroom tasks in terms of types of sensory stimulation, level of cognitive abstraction, etc.
- Management variables such as reinforcement schedules, practice, etc.
- Evaluation variables including formative and summative evaluation
(Uprichard 1975, 31)

Educational researchers who study such patterns of interactions will be hampered by the communication paradigm which assumes a single

sender, single message, and single receiver. Few educational researchers, however, are aware that a second paradigm of communication research is available. The "social" paradigm is perhaps better suited to studies of social groups such as learning groups in a classroom. The rationale for this study is the need for educational researchers to learn that there is more than one paradigm of communication research and that a paradigm which may prove useful for classroom studies has been developed within the discipline of communication research.

3. Overview.

Chapter One presented the rationale for this study as the change in educational organization and orientations of educational researchers from a teacher-sender, message, student-receiver and one-way linear transmission of information view to a complex, multivariate, systemic view of learning systems, necessitating a paradigm shift. Educational researchers should be made aware that communication researchers have already formulated a new paradigm, one which may prove useful in studies of learning systems. The problem of the study was formulated as a metacommunicational question: given these two paradigms in communication research, what do the theoretical assumptions and methodologies of each allow us to comprehend of human social communication? The same question is asked of the "natural history" approach within the "social" paradigm.

Chapter Two provides a description of the two main senses of the term, "communication", and shows how each sense is related to two general

paradigms of communication research, the "psychological" and the "social". Chapter Three explores the "psychological" paradigm in greater detail, and Chapter Four describes the "social" paradigm.

The fifth chapter is devoted to one research approach developed within the "social" paradigm, called the "natural history" approach, concentrating on the theoretical framework. Chapter Six outlines the "natural history" methodology. The following chapter gives examples of the kinds of data which can be generated by researchers using this approach, including linguistic and kinesic transcription of 150 frames of an interview film, film-frame tracings, and a narrative description of the interview originally studied by the team of scientists who produced The Natural History of an Interview.

The final chapter outlines implications for educational researchers of the "natural history" and other kinds of "social" communicational research.

CHAPTER ONE

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CHAPTER TWO

TWO PARADIGMS OF COMMUNICATION RESEARCH

Failure to examine the conceptual structures and frames of reference which are unconsciously implicated in even the most innocent of factual inquiries is the greatest single defect that can be found in any field of inquiry.
(John Dewey Logic: the theory of inquiry)

The word "communication" is used so frequently and in so many lay contexts that we rarely stop to think of its meanings. We are told to "communicate more" or to use more "nonverbal communication" if we want to improve our lives and relationships. Our society is interconnected by an enormous nervous system of television, telephone, radio, film, and other "communication media". We have little doubt that communication is important, in an age of "the communications revolution". But by taking communication so much for granted in daily use, we make it difficult for a scientific researcher to define the term "communication" explicitly and delimit it to a single reference, and often such attempts seem ludicrous academic exercises when everybody knows what communication is.

Examination of definitions of "communication" in both lay and scientific contexts, however, reveals that there are not one but two basic meanings, each related to a paradigm of communication research.

1. Two meanings of the word "communication".

Texts on instructional materials traditionally began with a discussion of the nature of communication. Wittich's text, written for teachers, describes the "basic communication process" as follows:

Messages, information, or reactions to information travel between that which initiates and sends them, toward that which receives them. The route along which the messages travel may be thought of as a 'communications channel'. The message (stimulus) may be the statement made by the pupil or the teacher, or it may be provided in a film, chart, picture, or chalkboard illustration. The receiver of this stimulus reacts in some way; that is, he may listen, see, or examine through touch or taste. These reactions can lead to active responses....Ideally, the communication channel carries both messages and counter messages; it involves imitation, reception, response, or, as it is sometimes called, 'feedback'.
(Wittich and Schuller 1967, 13)

Dale's text uses a different definition of "communication":

Communication is defined as the sharing of ideas and feelings in a mood of mutuality.
(Dale 1969, 19)

These examples point out two basic senses of the word "communication". Derived from the Latin verb communīcāre, meaning "to make common", the word originally denoted mutuality, participation, commonality, and sharing. Participants in Holy Communion were termed "communicants" in this sense of engaging in a mutual and ritual sharing. In recent centuries, however, the meaning has shifted to communication as the act of imparting information. Carey points out that this "transmission of

information" sense rests on a metaphor of transportation:

In the nineteenth century, though to a lesser extent today, the movement of goods or people and the movement of information were seen as essentially identical processes, and both were described by the common noun 'communication'.
(Carey 1975, 3)

He also relates the transmission sense to increased movement through space beginning with the Age of Exploration and with a religious imperative to bring the Word to the heathen by sending missionaries.

While "communication" in the older sense was a social ritualized program in which people engaged together, "to communicate" in the newer sense is a transitive verb implying action by one person which affects another, and the noun "communication" refers both to this act and to the information which is sent from one to another. The older sense implied transaction, while the newer sense implies action followed by reaction.

2. Definitions of "communication" in the communication research literature.

Definitions of "communication" as a scientific term range from logical stipulations of necessary and sufficient conditions to pragmatic definitions consisting of lists of the phenomena which communication researchers have studied. They range in scope from the general --

Communication occurs when events in one place or at one time are closely related to events in another place at another time.
(G A Miller 1973, 3 -- originally italicized)

-- to the specific:

Thus, communication process cannot occur without any one of four elements:
 (1) a generator of (2) a shared sign/symbol stimulus projected to (3) a perceiver which (4) responds systematically to the sign/symbol stimulus.
 (Fink and Goyer 1968, 95)

The definitions may include all levels of communication, from intracellular through intercultural or interplanetary, or may choose one level such as human verbal communication.

Most of the definitions appearing in the communication research literature utilize the metaphor of information transmission seen as the sending of a message from one individual to another. Often one element, sender, message, or receiver, is made the criterion for communication. Gerbner's early definition, for example, centered on the sender:

(1) Someone (2) perceives an event, (3) and reacts, (4) in a situation, (5) through some means, (6) to make available materials (7) in some form, (8) and context, (9) conveying content, (10) of some importance.
 (Gerbner 1956, 172-173)

Aranguren stressed the message element:

Let us therefore define communication as any transmission of information by means of
 (a) the emission, (b) the conduction, and
 (c) the reception of (d) the message.
 (Aranguren 1967, 11)

Stevens' early definition focussed on the recipient:

Communication is the discriminating response of an organism to a stimulus.
 (S S Stevens 1950, 689)

Thayer's more recent formulation emphasizes the receiving organism's activity of taking messages "into account":

If this basic phenomenon does not occur,
communication does not occur -- however
we might define communication. It is
therefore the sufficient condition
in the process of communication....
It is the basic phenomenon that occurs
when a living system takes-something-into-
account.
(Thayer 1968, 26)

The assumption that communication necessarily involves a sender, a message, and a receiver -- any one of which may be given primary importance in a definition of the term -- leads to a willingness to ask certain kinds of questions and a reluctance to ask others. Sender-oriented definitions, for example, imply questions about communicator characteristics such as credibility, attractiveness, status, creativity, artistic control, or productivity. Message-oriented definitions imply studies using content analytic techniques, measurements of speed, typographic characteristics, or questions of message design. Receiver-oriented definitions lead to research on observable reactions to information (as in many attitude-change studies), intrapsychic coding processes, effects of repetitions of messages, or personality traits of innovators who apply new information.

Some researchers have rejected simple sender-message-receiver definitions in favor of statements which attempt to match in complexity the phenomena to be studied, as in this example:

The process of communication is seen as the
changing patterns of events or contacts between
the constituent components of a transactional
situation.
(King 1968, 389)

But as the definitions become more complex, they seem less useful.

Relatively few communication researchers have incorporated the older sense of the term "communication" in their definitions. Carey explains what such a definition would look like:

In a ritual definition, communication is linked to such terms as sharing, participation, association, fellowship, and the possession of a common faith. This definition exploits the ancient identity and common roots of the terms commonness, communion, community, and communication. A ritual view of communication is not directed toward the extension of messages in space but the maintenance of society in time; not the act of imparting information but the representation of shared beliefs.
(Carey 1975, 6)

Gerbner's definition approaches this form:

Communication is interaction through messages. Messages are formally coded, symbolic, or representational patterns of some shared significance in a culture. Culture itself may be broadly conceived as a system in which messages cultivate and regulate relationships.
(Gerbner 1974, 57)

But research definitions using the older sense are very rare in the literature.

There is a wide range of definitions of "communication" due to the variations in emphasis on the different elements of the sender-message-receiver sense. Barnlund stated:

Communication has been conceived structurally (sender-message-receiver), functionally (encoding-decoding), and in terms of intent (expressive-instrumental). It has been defined with reference to source (production of messages), channel (signal transmission), receiver (attribution of meaning), code (symbolizing), effect (evoking of response), and in ways that combine several of these criteria.
(D C Barnlund 1968, 5)

Dance, in a review covering ninety-five definitions of communication, concluded that the term had been used in so many different ways that it ought to be replaced with a "family of concepts" (Dance 1970, 210). Chase proposed indexing each use of the term to avoid confusion: communication₁, communication₂, communication₃, and so on. (Chase 1953, 27). And one researcher simply refused to define the term at all:

Communication is so diverse and discursive that the attempt to create a generally accepted definition becomes so profoundly involved that it hinders rather than helps further thought on the subject.
(Newman 1966, 56)

Blake and Haroltsen, in a text on the concepts of communication research, noted that:

While communication is a widely used concept, one must emphasize that there is not complete agreement among observers as to the dimensions of the term.
(Blake and Haroltsen 1975, 3)

And Thayer concluded:

...certainly there is no universally accepted concept of communication.
(Thayer 1967, 70)

3. The concept of communication.

It is extremely difficult to formulate an adequate definition of the term "communication" for research purposes for several reasons. The first is the familiarity and over-use of the word in lay contexts. Hymes pointed out that linguists have taken communication for granted,

and have as a result learned little about language as a means of communication (Hymes 1974, 40). Often the researcher simply tries to make explicit the meaning he knows from daily use, which is usually the "information transmission" meaning rather than the older "communion" meaning.

A second problem lies in bounding the concept associated with the term "communication". Where does "communication" stop and "non-communication" begin? Wilden points out that while linguists can divide talking from non-talking with relative ease, communication researchers have no simple behavioral difference:

In the linguistic model, there is a well-defined boundary between speech and silence. But there is no such boundary in the communicational model between communication and non-communication, or between presence and absence.
(Wilden 1972, 448)

In the lay context, we recognize the communicative value of silence, letters not sent, phone calls not answered, kisses not given, and tears. Since human bodies are almost never motionless (we define mental illness of one type in terms of the patient's refusal to change posture and position), they are potentially communicative all of the time. Watzlawick takes the "impossibility of not communicating" as the first axiom in his communication theory (Watzlawick 1967, 48). A definition of communication which reflects this lack of boundary will be incapable of excluding anything and thus useless. Those who study animal communication and cannot simply identify communication with speech and non-communication with silence are particularly sensitive to this problem:

It is not easy to mark the boundaries of the subject of animal communication. Some quite good reasons might be offered for viewing the subject as encompassing all phenomena of life, for the very notion of biological adaptation can be said to involve an animal populations's or, more to the point, a gene pool's communication with its environment.
(Bastian 1968, 29)

Wescott attempts to solve this problem by envisioning a continuum ranging from "minimal" to "maximal" communication (with inorganic, unspecialized communicational processes at one end, and organic, specialized processes at the other) which avoids a break between communication and non-communication (Wescott 1966, 344). The communication researcher must recognize the fact that any imposition of a boundary dividing communication from non-communication is arbitrary.

Some criteria for separating communication from non-communication have been suggested. One is intentionality on the part of the sender:

In the main, communication has as its central interest those behavioral situations in which a source transmits a message to a receiver(s) with conscious intent to affect the latter's behavior.
(G Miller 1966, 92)

Another is observable evidence of reception of a message:

If the stimulus is ignored, there has been no communication. The test is a differential reaction of some sort. The message that gets no response is not a communication.
(S S Stevens 1950, 689)

Other criteria include the presence of a physical message and the observation of both the sending and the receiving of a message.

There is no clear standard of evaluation with which these various criteria for the occurrence of communication can be judged. Intentionality is difficult to verify, especially when unconscious processes and animal communication are considered. Observable reactions may be delayed or wholly internal; Freudians, for example, say that experiences of early childhood affect adult behavior, even when an observer of the child was unable to detect a reaction. The criterion of a physical message is inadequate because few observers have been trained to detect micromomentary changes of facial expression, olfactory or thermal or paralinguistic messages, or seemingly meaningless behaviors. In addition, it is very difficult to determine just which messages have been selectively perceived. Thus, not only is the concept associated with the term "communication" difficult to bound, but the observable indices are arbitrary and difficult to defend.

Another reason for the variety of definitions of communication is the historical fact that communication researchers are united by a diffuse common interest but are trained in and identify with several different disciplines. Smith lists sixteen fields, ranging from psychology to library science, within which communication research has been conducted (Smith 1971). Lin describes eight different communication research traditions, including persuasion, group process, mass communication, journalism, electrical engineering, and psycholinguistic studies (Lin 1973). Gordon concludes that:

In short, at present, a communication expert is likely to be oriented to any of a great number of disciplines in a field of inquiry that has, as yet, neither drawn for itself a conclusive roster of subject matter nor agreed upon specific methodologies of analysis. (Gordon 1974, 1005)

This conceptual confusion surrounding the term "communication" has ramifications for the theorist and researcher. Ideally, the inquirer states his terms with definitions and relates them to indices at the outset:

When beginning an analysis, a theorist normally defines a set of standard terms that he will use in building his theory. Some of these are concepts; others, variables. A concept consists of (1) an idea (e.g., people being separated on the basis of race) and (2) a word associated with that idea (e.g., segregation)....A variable describes a situation and is often a compact summary in the form of a number selected from a set of numbers ...or a word selected from a set of words.
(Mullins and Mullins 1973, 4)

Communication researchers who cannot agree on the basic concepts and variables will be unable to build on each other's work or to compare rival theories dealing with the same phenomena.

4. Theoretical and methodological diversity in communication research.

Theories of communication processes range from formal axiom systems to pragmatic low-level hypotheses. The Journal of Communication, especially for the twenty-year period of 1950 to 1970, was filled with discussions of communication theories. Some articles dealt with the question of whether a unified theory of communication would ever be possible. Mortensen said it was not:

Something as complex and elusive as human communication does not lend itself to neat and tidy theories. Hence, it is too much to expect a study of basic theory to yield a single, unified perspective on the subject. The concept of communication theory should be taken as an umbrella term for a host of general principles and orienting statements designed to specify causes and key relationships among the given facets of communicative behavior. (Mortensen 1973, 1)

Thayer proposed that researchers stop looking for a single theory of communication and suggested different theories for different levels of analysis (Thayer 1963, 224). Five years later he concluded that:

There has not been, and still is not,
a single comprehensive theory of human
communication...
(Thayer 1968, 307 -- originally italicized)

There was one theory of communication which gained much support in the 1950's and early 1960's as the theory of communication, the Shannon-Weaver "mathematical theory of communication", also referred to as "information theory" and further developed by Wiener into a cybernetic theory of communication. Its universality came from the assumption that one bit of information in one medium equalled one bit of information in any other medium.

The mathematical theory of communication is so general that one does not need to say what kinds of symbols are being considered -- whether written letters or words, or musical notes, or spoken words, or symphonic music, or pictures.
(Weaver 1966, 22)

The production, transmission, and reception of strings of bits could be measured according to precise mathematical formulas, and noise and error rates could be computed. Potentially any act of communication -- seen as information transmission -- could be measured. This universality of application came at the cost of ignoring the realm of meaning, however:

In communication engineering we regard information perhaps a little differently than some of the rest of you do. In particular, we are not at all interested in semantics or the meaning implications of information. Information for the communication engineer is something he transmits from one point to another as it is given to him, and it may not

have any meaning at all....For communication work we abstract all properties of the messages except the statistical properties which turn out to be very important.
(Shannon 1951, 123)

Some communication researchers protested that a theory which excluded meaning could never be adequate:

Communication describes the evolution of meaning ...The word 'communication' stands for those acts in which meaning develops within human beings as neuro-muscular responses are acquired or modified... no matter what the context, it is the production of meaning, rather than the production of messages, that defines communication.
(Barnlund 1970, 47-48)

There are almost as many theories of communication as there are communication researchers, for several reasons. We have noted the conceptual confusions surrounding the term "communication" and seen that differences in definitions often lead to differences in theories employing the term. Secondly, we have seen that communication researchers resigned themselves to the prospect of a plethora of theories and gave up on the development of a unified theory. One theory which claimed it could be applied to all situations of communication, the "mathematical theory of communication", succeeded only by eliminating the important element of meaning. Finally, the differences in training and disciplinary orientation among communication researchers are reflected in the variety of theories they propose.

There is also a wide range of methodological tools and strategies in communication research. Some researchers use philosophical techniques and arguments to analyze the relationships among language, thought, and meaning. Semioticians describe syntactic, semantic, and pragmatic relationships between sign systems and users of signs.

Rhetoricians prescribe proper and effective communication behaviors and styles. Speech pathologists and therapists attempt to correct physical and psychological defects of communication functioning. Social psychologists prepare messages designed to change attitudes and measure communicator, message, and audience characteristics in laboratory settings. Psycholinguists measure error rates and reaction times for individual subjects exposed to isolated consonants or nonsense syllables. Communications engineers measure rates of information transmission in telephone and television lines. Phoneticians study spectrographs of speech sounds. Animal behaviorists administer hormones to organisms in the laboratory. Ethologists endure hours of patient observation of animals in their natural habitats, and human ethologists do the same with infants. Linguists question informants in order to elicit sound and grammatical patterns of a language. Ethnomethodologists tease out the social processes by which participants in an interaction make sense of their activities by studying videotapes or typescripts of conversations. The list is nearly endless, for the research tools are as varied as the researchers' disciplines, interests, and kinds of questions about communication. Methodologies range from quantitative and experimental to qualitative and descriptive, from laboratory studies to naturalistic observation, and from formal to intuitive approaches.

This very diversity of theories and methodologies forces the student to specialize in one subfield of communication research which in turn increases the diversity. It is all too easy to forget that the common focus of all these studies is communication.

5. Two paradigms of communication research.

Underlying the diversity of communication inquiries are two basic paradigms which are related to the two primary meanings of the word "communication". The first meaning -- communication as the transmission of information -- is a characteristic focus of what I have called the "psychological" paradigm. The second and older meaning -- that of participation, mutuality, and sharing -- has been adopted by researchers working within the "social" paradigm.

In an early review of language studies, Barker described two general approaches, the "psychological" and the "sociological". The first attempted to relate language to thought:

According to this older view, the main function of language was to express or communicate 'mental content'.
(G Barker 1945, 228)

In this view, language, the primary means of human communication, functioned to allow individuals to make their thoughts known to other individuals. The second, "sociological" view of language related speech to other coordinated human behavior performed by members of social groups. Language was seen as a means of maintaining and defining a group of people in relation to other groups and the environment, and as a means of regulating intragroup relations.

Duncan made a similar division of nonverbal communication studies according to both theoretical and methodological differences:

One strategy is to study communication as a tightly organized and self-contained social system, like language. This system operates according to a definite set of rules, and the task of the researcher is to explicate these rules. I shall call this the structural approach. The other strategy is to relate the rate of occurrence of specified nonverbal behaviors to a variety of external variables, such as the interaction situation, the personality characteristics of the interactants, or the reactions of judges to the interaction. I shall call this the external variable approach.
(Duncan 1969, 121)

This division into "psychological" and "social" approaches to the study of communication processes reflects a deeper division in the human sciences between the individual-oriented disciplines of psychology and economics, for example, and the social sciences such as anthropology which posit group-level phenomena which are not reducible to the individual human members of groups.¹

The "psychological" approach is based on the conception of communication familiar to us from daily life:

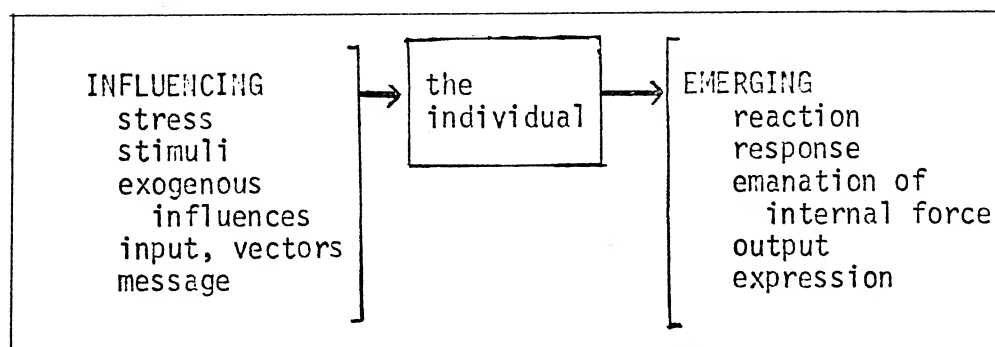
Communication between two speakers can be characterized as the exchange of an idea. One person has an idea, encodes it into a systematic phonetic representation, sends instructions to his vocal apparatus, which creates a speech signal -- a sound wave -- that impinges on the ear of the hearer. The hearer first decodes the signal to ascertain what systematic phonetic and phonological representations the speaker encoded. He then uses that information to form further hypotheses about what the speaker meant -- the idea he originally encoded. This process happens in a fraction of a second and is completely unconscious. The only physical contact between speaker and hearer (ignoring nonverbal cues) is the sound wave that passes between them. It must carry all the information.
(Cairns and Cairns 1976, 143-144)

1. The selection of the terms "psychological" and "social" may be ill-advised due to their varying connotations. I intend to indicate an individualist versus a collective view.

In the "psychological" approach, the individual organism is taken as a black box. Ruesch pointed out that a single human or animal, a cell, a homogeneous group, and a computer could each be placed into the black box of communicator either as sender or as receiver:

Cell, organism, organization, and certain machines are capable of receiving, evaluating, and transmitting messages. The input functions that are concerned with reception are characterized by sensors or similar devices that can accept signals emanating from the outside (exteroception) and from within (proprioception). Once the incoming signals have been recodified for transmission within the unit, central functions such as data screening (cognition), data processing (thinking), and data storage (memory) contribute to evaluation (decision-making) of the available information. A communicating entity signals to the outside by means of output functions, which in the human organism consist of contractions of muscles resulting in verbal or gestural expression or action.
(Ruesch 1974, 69-70)

Scheflen diagrammed the individual-black box communicator as follows:



(Scheflen 1964, 8)

Figure II-1: The Individual as a Black Box

In this view, messages come into the communicator and behaviors and expressions go out. Any individual can be seen as this sort of communicator.

The "social" approach to communication research posits what Durkheim labeled "social facts" almost a century ago as its basic units. Communication is seen here not as expression of an individual's thoughts or feelings to another individual but rather as socially-regulated behavioral systems. No individual invents his native language; each must learn the language spoken by members of the human group into which he or she is born. Individuals do not create moral, legal, and customary rules for behavior anew each time they meet; rather, members of a cultural group behave according to common codes passed down from one generation to another. All communication systems, in this view, can be studied on the group level.

While the "psychological" approach could be described with the image of two individuals, one on each end of a telephone line, the "social" approach involves images of an orchestral performance, the unison movements of a flock of birds, and the behavioral program of a church service.

The "social" approach involves multiples of senders, receivers, and messages who are related through several media and at different times. Rather than the transmission of a message from one individual to another, "social" thinkers about communication envision patterns of messages flowing from one to many, from many to one, from one to one, or from many to many senders and receivers nonlinearly.

The "psychological" approach assumes an ideal sequence of action followed by reaction. "Social" researchers, however, deal in relationships. In this second view, social communication cannot be explained as the sum of individual actions and reactions:

It is reductionism to believe that knowledge of an individual will explain a phenomenon that occurs in a relation of individuals. Concepts like cooperation, symbiosis, conversation, marriage, and proximity are not within a person but between persons, i.e., in the relations of people to each other. (Scheflen 1964, 10 -- italics in original)

I have called these two approaches "paradigms" because, while Kuhn hesitated to say that social scientists could have paradigms, I see evidence of a paradigm shift in the move from the traditional "psychological" approach to the "social" approach. Researchers using the two approaches employ different terms, assumptions, methodologies, questions, and levels of analysis. The "social" approach was developed by going back to basic issues such as the nature of communicational processes, by intense cross-fertilization of several disciplines ranging from ethology to psychiatry, and by painful conscious changes in understandings of the scientific process. According to the following description of a paradigm shift, the move from the "psychological" to the "social" approach is best understood as an incomplete transition, since the newer approach is presently used by a minority of communication researchers and coexists with the traditional approach:

The transition from a paradigm in crisis to a new one from which a new tradition of normal science can emerge is far from a cumulative process, one achieved by an articulation or extension of the old paradigm. Rather it is a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalizations as well as many of its paradigm methods and applications. During the transition period there will be a large but never complete overlap between the problems that can be solved by the old and by the new paradigm. But there will also be a decisive difference in the modes of solution. When the transition is complete, the profession will have

changed its view of the field, its methods,
and its goals.
(Kuhn 1970, 84-85)

6. Two views of the scientific enterprise.

The "psychological" and "social" paradigms in communication research can be related to broader issues in the philosophy of science. The choice between these two paradigms implies a choice between two conceptions of science. Blake and Harolidsen, for example, when they define communication research as follows --

Communication research is the scientific investigation of the communicative process. By scientific is meant that the investigation is a systematic, controlled, empirical, and critical examination of the supposed relationships of the variables involved.
(Blake and Harolidsen 1975, 142)

-- imply a view of science as the experimental confirmation of hypotheses in the context of a growing theoretical network. This view of science has been called the "Received View" by Suppe (1974). Based on Logical Positivism, this view poses two levels of inquiry, the level of data and observations and the level of theoretical terms which are indirectly related to sensations. Scientific knowledge is seen as cumulatively increasing, each inquiry building on and refining those before, and resulting in an axiomatized and logically ordered theoretical structure by which phenomena can be explained.

This Received View has come under attack in recent years. Kuhn, for example, questioned the assumption of cumulative growth in scientific knowledge and offered his description of revolutions in scientific thought. Popper questioned the assumption that experiments verified hypotheses, stating that falsification led to new

knowledge. Rappoport questioned the assumption that a theoretical system ought to be axiomatized and listed different kinds of scientific theories including stochastic, qualitative, taxonomic, and historical theories. Stephen Toulmin emphasized the importance of the scientist's preconceptions about the "natural order" of the universe which determine the sorts of phenomena he will view as anomalous; before the experiment begins, the researcher has an implicit understanding, often shared with other workers in his field, of what sorts of things deserve investigation and demand explanation because they appear irregular. Finally, a group of philosophers of science termed the "Weltanschauung analysts" by Suppe stressed the world-view or intellectual context within which research is conducted as enormously influential and rarely made explicit. These thinkers rejected the notion of "objective facts", claiming rather that

...what counts as a fact is determined by the
Weltanschauung associated with a theory.
 (Suppe 1974, 191)

In this contextualist view of science, the "fact" is conditioned by the theoretical network, the research paradigm, and the intellectual context within which the researcher works:

What is happening here is not that one sees the world and then interprets it from within one's disciplinary matrix; rather, one sees the world through one's disciplinary matrix, and although change in disciplinary matrix does not change the world, what is seen of it and how it is seen does change.
 (Suppe 1974, 149)

The "psychological" paradigm is most closely related to the Received View of scientific inquiry, and the "social" paradigm is related to the contextualist view, although the Received View is still influential and prestigious and the newer views are still revolutionary and held by a minority. Furthermore, there is a large gap between idealized descriptions of the scientific enterprise appearing in the literature of philosophy of science and in the first chapter of research texts, and the actual practices.

The "psychological" approach reflects the tendency of some researchers to identify with the natural or "hard" sciences while the "social" paradigm reflects the identification of other researchers with the behavioral sciences. Mead pointed out differences between these two orientations:

In the physical sciences, great advances have come about through the development of reliable instruments that permit observations into the very small and the very distant, instruments that can record in accurate codes various forms of sensory experience and instruments that make possible various kinds of measurement that are independent of the human observer. In the human sciences the principal emphasis in training has been on teaching the human scientist how to function as a very complex instrument, to use his body's sensory equipment as a multifaceted recording device...The human scientist has had to learn how to relate self-knowledge of him- or herself as a multisensory being with a unique personal history as a member of a specific culture at a specific period to ongoing experience and how to include as far as possible this disciplined self-awareness in observations on other lives and in other cultures. In contrast, the physical scientist has had to learn how to exclude as far as possible the effects of temperament, individual life experience, and culture on his observations and interpretations of data. (M Mead 1976, 907)

7. Broader contexts of communication research paradigms.

The two paradigms of communication research can be related to two larger intellectual contexts. The "psychological" paradigm implies an understanding of the universe as a machine, while the "social" paradigm implies an organismic metaphor. Such metaphoric understandings are influential in inquiry:

Metaphoric likening of the universe to an organism in its structure will yield one set of derivations, derivations which become propositions in complex systems of philosophy. But when, as happened in the seventeenth century, the universe is likened instead to a machine, not merely physical science but whole areas of moral philosophy and human psychology are involved. (Nisbet 1969, 9)

Researchers in the "psychological" camp are predisposed to accept such theories as information theory because in their implicit understanding of communication research, their task is to analyze the communication process into basic units of structure. Researchers in the "social" group, on the other hand, tend to be influenced by their understanding of phenomena as open organic systems and to view their task as one of describing function as well as structure, and patterns of relationships as well as units. The organismic view of the universe is synthetic and leads to questions about levels of patterning:

What we are really in search of, after all, is not a theory of the relations between things, but a theory far more radical. A theory of the relations between relations.
(Wilden 1972, 329)

Secondly, the "psychological" and "social" paradigms may be related to larger social and cultural patterns within which communication research is conducted in this country. The "social" view was developed primarily by anthropologists studying relatively small and culturally unique groups of people whose traditions had been preserved for centuries and seemed exotic enough to the observers that the customs and ways of life were easily perceived. The "psychological" view was developed by workers in this country who lived in a complex, increasingly urbanized and industrialized, computerized and modularized society. Mead reported that her students seemed far less familiar with intuition of social patterns than with analysis of parts:

Where no pattern has been crystallized by literary and artistic selectivity, and ideological interpretations of history, and where there are no adult guides through the confusing maze, with rare exceptions, the young anthropologist, linguist, semiotician today does not yet have in his or her own person the kind of sense of pattern which the previous pattern-seeking generation had.
(Mead 1969, 20)

Two other anthropologists reported difficulty in maintaining a synthetic view within the present cultural context:

For many reasons, we moderns are not good observers ...The fragmented nature of modern life makes it difficult to respond to the whole view.
(Collier 1967, 1)

The principal problem with most anthropological studies of the human body conducted thus far is that they have dealt with only bits and pieces of the body instead of the whole body...We have allowed our condition of social anomie, or formlessness, to creep into our research and we have not given definite organic form and structure to the limits and definition of our subject.
(Polhemus 1975, 33)

8. The two paradigms and Mullins' schema.

In a study of the sociology of sociological knowledge production, Mullins and Mullins developed a progressive taxonomy of social theories based not only on the influence and interdependence of ideas but also on the groupings of teacher-student and colleague-colleague relationships which result in such cross-fertilization and in institutionalization of theories.

There are four stages in the Mullins model through which groups of social theorists typically progress. The first stage, the "normal" stage, is characterized by individual researchers working in relative geographical and intellectual isolation from each other. Each researcher in effect has staked out his corner of the field. This stage is termed normal in the second sense taken from Kuhn, in that the traditional paradigm for the field is accepted by all. (Mullins and Mullins 1973, 21).

The second stage is termed the "network" stage, and is characterized by increased intercommunication among researchers mutually interested in a new idea, new discovery, or nascent heretical paradigm. The small group of researchers who become increasingly interested in each other's work may issue a "program statement" outlining future research in this new area and may begin to attract students. (Mullins and Mullins 1973, 21-22).

The third stage, the "cluster" stage, consists of the formation of small groups of researchers at the same geographical locations, including graduate students, whose interactions are more formal and more intensive. Researchers within these groups build on each other's work and gradually formulate a revolutionary intellectual paradigm.

Research and training centers may be created (Mullins and Mullins 1973, 23-24).

In the fourth, "specialty" stage, members of the research cluster begin to migrate from the home centers and develop individual interests. The field may be institutionalized by the creation of journals, texts, and academic positions. The rates and perhaps the quality of interactions among researchers decrease.

The "psychological" paradigm represents theory groups which probably never progressed beyond the first stage, despite the establishment of the Journal of Communication, and schools such as the University of Pennsylvania Annenberg School of Communication. Communication research as such remains a field of interest, one characterized by a great diversity of studies conducted by members of many different disciplines. Schools of communication typically focus on mass media communication, but a career in communication may turn out to be anything from electrical engineering to public speaking, from applied fine arts to journalism, and from television production to group psychotherapy. Few communication researchers at this point could agree on the same list of Founding Fathers, theoretical assumptions, methodology, training, or questions worth asking.

The "social" paradigm, however, represents a reaction against the traditional "psychological" paradigm. Theory groups in this case progressed to the "network" stage but have so far failed to attain the coherence and institutionalization of the "cluster" and "specialty" stages, due to changes in the intellectual climate and funding patterns.

The research group which produced a study called "The Natural History of an Interview", for example, is one theory group working within the "social" paradigm which approached the "cluster" stage. The "Founding Fathers" included Gregory Bateson, Frieda Fromm-Reichmann, Henry Brosin, Norman McQuown, Ray Birdwhistell, and others at the Center for Advanced Study in the Behavioral Sciences at Palo Alto in 1956. After the team selected research materials and questions, the scientists returned to various universities and other institutions where they developed small research centers and involved other colleagues and students. By the early 1960's, this theory group had established a theoretical position and research methodology which appeared to be a revolutionary paradigm in the study of human communication. In the mid- and late-1960's, however, as the Chomskyian transformational grammar revolution swept through linguistics, structuralism gained adherents in anthropology, and funding for basic research dwindled, the researchers were forced to complete their project, focus on other kinds of questions, and disband the training centers, a process which is still continuing. Since this group's work did not become widely published in such journals as The Journal of Communication, and since papers were read at annual meetings of psychological, psychiatric, and anthropological organizations, the new paradigm was not branded revolutionary by the traditional communication research institution, which was itself probably too diffuse and characterized by too low a degree of organization and intercommunication to respond in defense of its paradigm.

TABLE II-2: GROUP PROPERTIES BY STAGES OF GROUP DEVELOPMENT
(From Mullins and Mullins 1973, 28)

PROPERTIES	NORMAL STAGE	NETWORK STAGE	CLUSTER STAGE	SPECIALTY
1. Intellectual leader(s)	Founding Father(s)	Probable integration of concept, etc.	Should have highly productive student groups	May leave
2. Social organizational leaders	NA	Organizes training center	Arranges jobs, publications, meetings	Continues activities
3. Research & training centers	NA	Develops where people are starting to work together	Generally one or two more; at least one becomes a strong training center	No specific center; research is diffuse
4. Intellectual successes	First written success appears roughly at end of stage	Attracts other scientists, students	Many successes leading to divergencies	No longer important as the group institutionalizes
5. Program statement(s)	NA	Stated during this stage	Becomes a "central dogma", particularly for revolutionary groups	Work becomes routine
6. Secondary material	NA	NA	Appears here	Limited to consolidation
7. Critical material by group	Can appear here (revolutionary)	Can appear here (revolutionary)	Possibly can appear here also (revolutionary)	NA
8. Critical material about group	NA	NA	Appears here (revolutionary)	Becomes routine
9. Text	NA	NA	NA	Appears here
10. Group size	Indeterminant	(Informal relations) Up to 40	(More formal relations) (7-25 in actual cluster)	20-100+

The characteristics of theory groups at each of the four stages in Mullins' scheme are summarized in Figure II-2, page 39. The reader may note that neither the "psychological" nor the "social" theory groups attained enough coherence to follow the patterns described by Mullins for such social theory groups as symbolic interactionism, small group theory, or "new causal theory".

9. Summary.

The word "communication" has two primary meanings. One sense has a longer history and denotes participation in social ritualized activities, mutuality, and sharing. The other and more recent sense denotes the transmission of information from one individual to another. Definitions of "communication" as a research term in the literature typically take the second meaning for granted, and differ in the emphasis they give to the sender, the message, and the receiver of information. The concept of communication is quite difficult to comprehend, despite its familiarity in the lay context, due to the problem of setting boundaries separating communication from non-communication. The criteria for inclusion and exclusion are not clear. This conceptual looseness is reflected by enormous theoretical and methodological diversity in the multi-disciplinary area of communication research.

If, however, the two senses of the word "communication" are used as guides, the student can organize the diffuse literature of communication research into two main approaches, here called the "psychological" and the "social". These two approaches can further be understood as distinct research paradigms, which can in turn be related to two understandings of the scientific enterprise and to

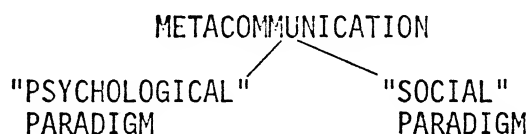
larger intellectual and cultural/social contexts as well.

The "psychological" and the "social" approaches are the first cut in this study of communication about communication, or metacommunication. Each represents a different metacommunicational standpoint. Each influences the shape and goals of inquiry into communication. Each represents an intellectual universe of discourse within which the units and structures of human communication discovered by the researcher make sense.

No claim is made about the superiority or inferiority of either approach. The "psychological" paradigm is most appropriate for certain kinds of research questions, and the "social" is best suited to others, as the following two chapters will demonstrate.

The purposes of this division into "psychological" and "social" approaches are (1) to enable communicational and educational researchers to consciously select the ideas with which they begin inquiry; (2) to help researchers evaluate reported studies by placing them in the proper context; and (3) to show that our lay understanding of communication is not the only possible and not necessarily the most scientifically valuable one.

The division can be diagrammed as follows:



CHAPTER TWO

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Communication, in general, is the transmission of ideas from one person to another; if the second person does not understand the ideas of the first, there is no communication.

--from a letter published in
Supervisory Management 23,1,48
for January 1978.

CHAPTER THREE

THE "PSYCHOLOGICAL" APPROACH

Communication takes place when one mind so acts upon its environment that another mind is influenced and in that other mind an experience occurs which is like and is caused in part by that experience.
(I A Richards 1947, 177)

The relationship in which communication takes place seems simple: two people (or more) come together over a set of informational signs that are of mutual interest to them...One participant in the relationship puts out the signs. The other makes some sense of them. That, in the simplest terms, is the communication process.
(W Schramm 1973, 41 and 48)

1. Defining "communication" from the "psychological" point of view.

Researchers using this approach tend to assume that the communication process consists of the transmission of a message from one individual to another, followed (optionally) by the transmission of a second message from the receiver back to the sender, continuing until the end of the encounter. This process may be diagrammed as follows:

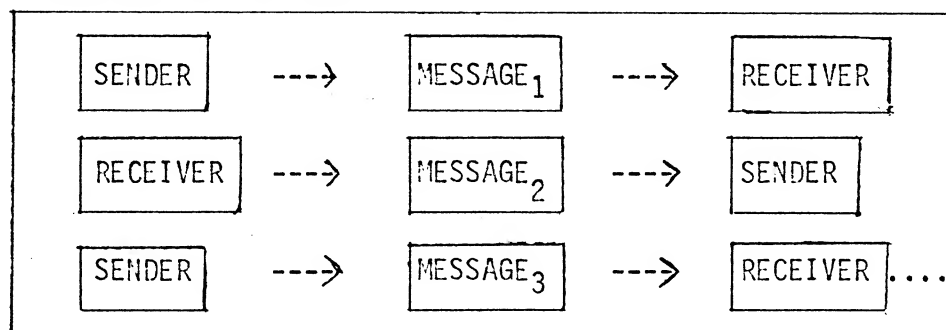


FIGURE III-1: BASIC COMMUNICATION MODEL OF "PSYCHOLOGICAL" PARADIGM

While the language used in the definition reflects the researcher's orientation, the basic definition of "communication" appearing throughout the literature of communication research conducted within the "psychological" paradigm assumes a sender, a message, and a receiver, with transmission of the information from sender to receiver.

Fearing's definition, for example, uses the language of field theory:

A communicator is a person (or persons) who produces or controls the production of a body of sign-symbol material with the intent ...of cognitively restructuring the field (or fields) of specific interpreters who are assumed by the communicator to have specific needs and demands...The situation is cognitively restructured by the produced contents and the communication may be said to occur when the perception of such content brings communicators and interpreters into dynamic relationships.
(Fearing 1968, 31 and 33)

This definition utilizes the language of behavioristic psychology:

Communication is the dual process of providing and responding to stimuli.
(Oliver 1967, 272)

Others are stated in the language of electrical engineering:

The basic idea is that an information source has a message that it is trying to get through some channel to a destination. It employs two transducers, a transmitter, and a complementary receiver, to convert the message into a transmittable signal and recover it from the channel. It must contend with certain disruptive forces represented by a noise source.
(Darnell 1971, 38)

The diversity of disciplinary orientation shown in these definitions can also be seen in the approaches to communication research used by "psychological" researchers.

2. Approaches to communication research within the "psychological" paradigm.

This body of research can be divided into approaches along disciplinary lines. I will describe four such approaches: the traditional communication research, information theory, social-psychological, and network approaches.

In the traditional communication research approach, the sender-message-receiver elements are incorporated into elaborate models of the communication process. One of the earliest models is Lasswell's:

FIRST
APPROACH

WHO
SAYS WHAT
IN WHAT CHANNEL
TO WHOM
WITH WHAT EFFECT
(Lasswell 1948, 37)

FIGURE III-2: LASSWELL'S MODEL OF COMMUNICATION

which has been recently expanded by Ruesch:

WHO (Status, role, identity)
SAID WHAT (content or referential property of symbols)
TO WHOM (status, role, identity)
WHEN (chronological, biological, elapsed time)
IN WHAT FORM (oral, written, gestural)
WITH WHAT INSTRUCTIONS (metalanguage, interpretive devices)
AND WITH WHAT EFFECT (impact and feedback)
(Ruesch 1974, 71-72)

FIGURE III-3: RUESCH'S EXPANSION OF LASSWELL

Berlo's "S-M-C-R" model of communication (which he has apparently rejected in his 1977 book, Management is communication) transformed the "who" element into a "source" with communication skills, attitudes, knowledge, a social system, and a wider cultural context. The "what" element became the "message" with ingredients of message elements, content, treatment, structure, and code. He included "channels" of seeing, hearing, touching, smelling, and tasting. The "receiver" replaced Lasswell's "to whom" and included the social and psychological ingredients listed under "source" above (Berlo 1960).

Lee J. Thayer proposed a communication model with an originator, a message, a purpose on the part of the originator, a medium or channel, a situation or circumstance, and a receiver (Thayer 1968, 122-123). While Thayer has published several articles criticizing the traditional communication research approach, his model is typical of that approach.

A small group of theorists within this approach emphasized the dynamic nature of the communication process in their models of unwinding spirals (Barnlund 1970, 59), intermeshed gear wheels (Gerbner in Johnson and Klare 1961, 25), spirals and helixes (Goyer 1970, 11 and Dance 1967, 296), and the following image from Johnson (in Ross 1970, 11):

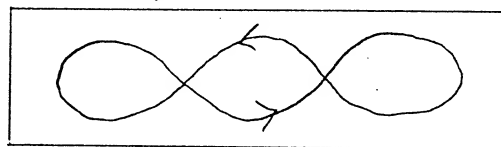


FIGURE III-4: A DYNAMIC MODEL OF COMMUNICATION

Articles on communication theory and models and studies measuring single variables in laboratory experiments are often published separately in the communication literature. A wide range

of variables can be found, depending on the researcher's interests: perceptual thresholds, personality traits correlated with speech characteristics, emotional expression messages in verbal and nonverbal media, communicational phenomena used in diagnosis of psychological distress, and psycholinguistic phenomena of encoding are a few.

The second approach within this "psychological" paradigm was developed by mathematicians and electrical engineers concerned with problems of telephone signal transmission. The basic model followed by those working in this communications engineering area was presented by Pierce as a model of a "universal communication system":

SECOND
APPROACH

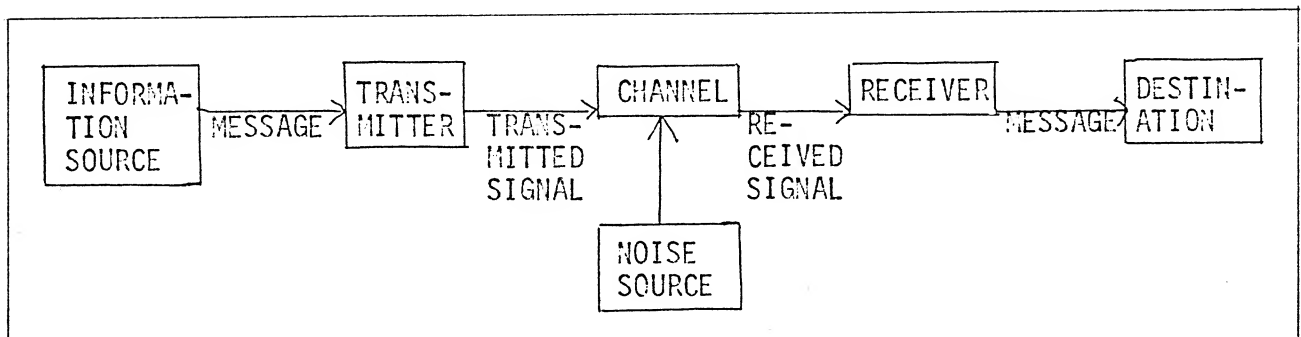


FIGURE III-5: INFORMATION THEORY MODEL
(From Pierce 1972, 4)

"Information" in this context refers to the reduction of uncertainty. If the information source and the destination, whether they are human or machine, possess the same set of alphabetical or numerical symbols, then the transmitted message functions as a set of instructions developed by the sender for selection of particular symbols from that array by the receiver. If one symbol occurs a hundred times more often than other symbols in the array, its occurrence in a message is highly predictable and non-informative. If all symbols are equally likely to occur, however, the transmission of any one of them is unlikely and very informative. The goal of communication, according to this approach, is to reduce the destina-

tion's uncertainty about which symbols are to be selected and in which order by the transmission of messages of instructions. When the symbols selected by the receiver match those chosen by the sender, the communication exchange is said to have been completed.

Mismatches are caused by noise in the communication channel, which includes the literal noise of static in electronic channels and psychological or cultural filters to perception, misinterpretations, insensitivities, and interferences. Errors due to noise can be corrected if a feedback loop from receiver to sender is established, so that the destination can inform the source about the message actually received. This new model can be diagrammed as follows:

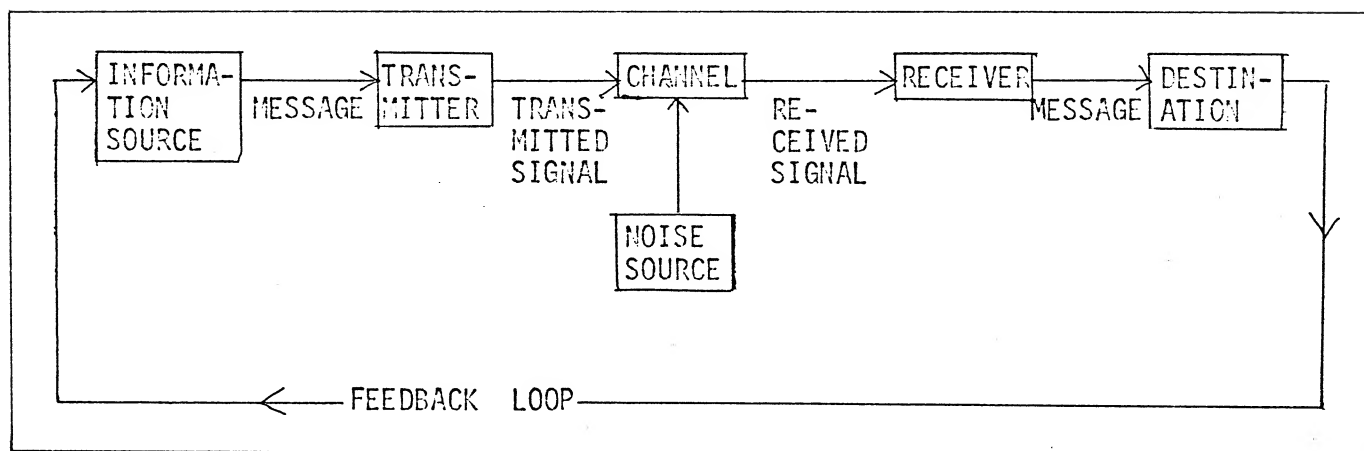


FIGURE III-6: INFORMATION THEORY MODEL
WITH FEEDBACK LOOP ADDED

While the new model appears to be circular rather than linear, it represents a sequence of linear transmissions of information from source to destination, from destination to source, from source to destination, and so on.

The language of information theory was incorporated into many traditional communication models. Sebeok's hexagonal model, for example, includes elements of a source, a destination, a designation,

a channel, a message, and a code (Sebeok 1962, 433-34). Ross' model of the human communication process, below, incorporates the information theory concepts into a highly elaborated model:

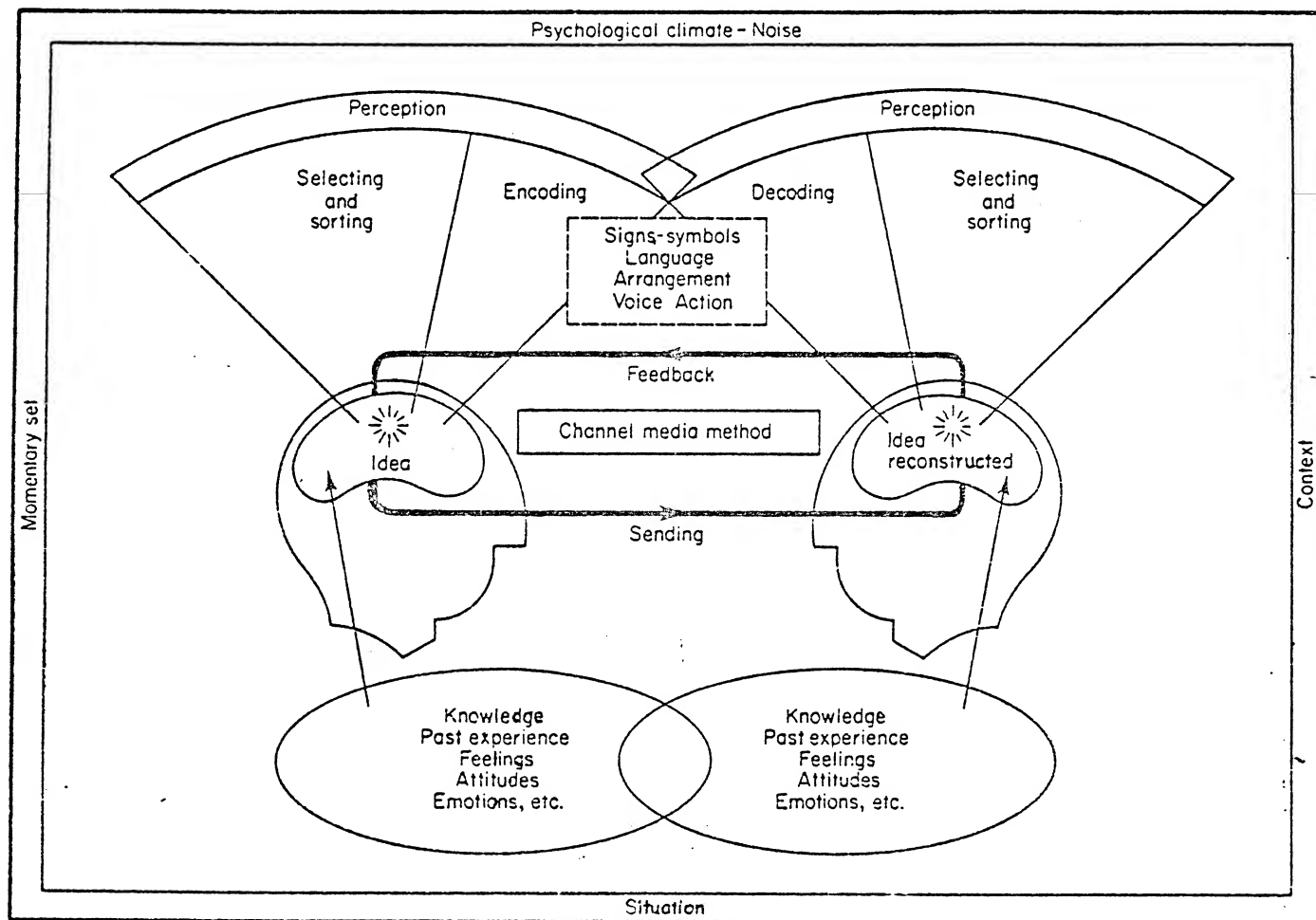


FIGURE III-7: Ross' model of human communication.
(Ross 1970, 15)

A third approach within the "psychological" paradigm is that of the social psychologists who study attitude change with reference to people and objects. They assume that:

THIRD
APPROACH

...communication among humans performs the essential function of enabling two or more individuals to maintain simultaneous orientation toward one another as communicators and towards objects of communication.
(Newcomb 1966, 66)

Newcomb's "ABX" model is representative:

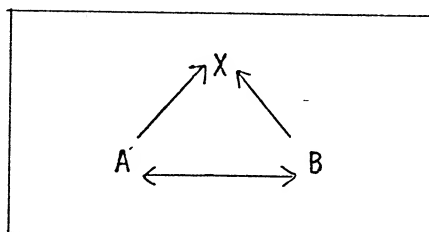


FIGURE III-8: THE ABX MODEL OF COMMUNICATION
(Newcomb 1966, 67)

Here A and B are persons with attitudes of attraction or repulsion toward each other and with attitudes of like or dislike toward some object X. Communications about the other person or the object cause the person to change his own attitudes toward both in the direction of symmetry: if A likes B and B likes X, A may become more favorable toward X. Here the basic model of sender-message-receiver has been extended to include an object, and the attitudes of the persons are of interest. Westley and MacLean (1966) expanded this model into a mass media communication model with multiples of senders, receivers, and objects.

A fourth approach is small group communication network research. Utilizing graph theory, researchers in this area varied the patterns of intragroup communication and measured both time spent and numbers of messages sent in the performance of a group task. Typically, group members would be required to determine which symbol was held in common

FOURTH
APPROACH

by sending written messages to other members whom they could neither see nor speak with. Patterns used included the following:

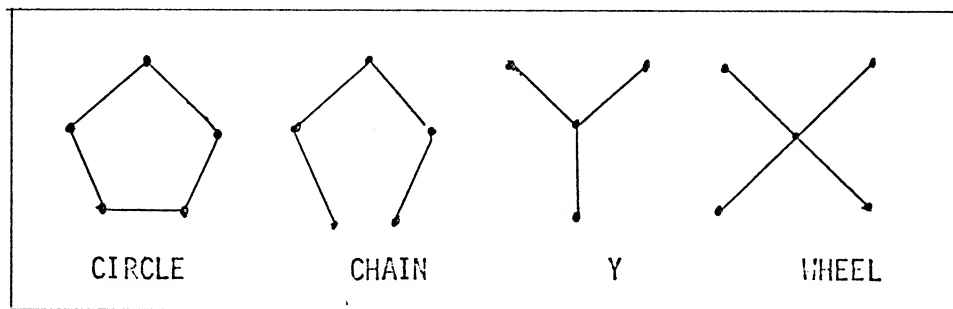


FIGURE III-9: COMMUNICATION NETS
(From Leavitt 1966, 229)

This discussion of four approaches within the "psychological" communication paradigm is not intended to be exhaustive. Communication research is too varied and diffuse to permit a simple listing of the areas studied. The general point is that within this paradigm, researchers tend to study the kinds of questions of interest to others in their original academic disciplines. The "psychological" communication researchers, a group which includes mass media, instructional media, speech communication, and engineering inquirers, are characterized by commonality of assumptions about the nature of communication rather than by common focus on a small set of phenomena or an explicit theory of communication.

3. The "psychological" paradigm in communication research: basic assumptions.

The "psychological" paradigm can be characterized by a set of interrelated assumptions. I will describe five assumptions about communication and a sixth about the nature of communication research. The reader should note that these assumptions are a system of ideas such that one implies the rest.

A. The first assumption is that human individuals are real, independent entities bounded by the opaque covering of skin.

This assumption is basic to the "psychological" paradigm: that the human individual is the essential observable concrete unit of measurement. This assumption implies that supra-individual phenomena such as social norms or cultural beliefs are both abstract and postulated by the inquirer. A further implication is that events occurring within the individual are also more like abstract postulations than like concrete entities. The biological, palpable, behaving, human individual is assumed to be the start of all inquiry into communication for researchers in the "psychological" school of thought. The assumption is familiar and feels more like a given than an assumption because it is made by people in our culture in daily life.

The second part of this assumption is that the individual is clearly marked off from everything that is not part of him by his skin; in this case, the boundary to the unit is said to be given by nature rather than supplied by the researcher. This skin is thought of as opaque, hiding the intellectual processes of the brain and the emotional processes of the viscera from view. Thus every human individual has an "inner" and an "outer" world, a private and a public part.

The act of communication consists of making public what was heretofore private by the expression of thoughts and feelings which would otherwise be accessible to the individual alone. Words and gestures are the means by which thoughts and feelings are made available to others:

Communication tends to be conceived as the making public through the appropriate intermediaries, the verbal or non-verbal signs, of things which cannot themselves come out into the open.
(Ayer 1955, 14)

One implication of this division into private (within the skin) and public (words and gestures) is that one individual can never have access to another's sensations, thoughts, or feelings. Thus the Western epistemological question of 'how can we know an object' can be traced back to the original assumption that individual A can never have direct access to individual B's experience. Further, one individual can never truly know another's hidden self:

This is the view that we have of 'ourselves' as being locked in 'our' bodies, in lifelong solitary confinement...We can shout and gesticulate at one another but can never have real knowledge of one another's true selves...
(Cherry 1966, 264)

If the individual is assumed to be separated from every other individual by the boundary of his skin, he is also separated from the rest of the natural environment. Westerners long cherished a romantic myth of the happy (and often Polynesian) savage who lived in tune with the natural world as if the boundary of selfhood had been breached or nullified. In America, the natural environment was seen as a force to be fought and mastered with fences, farm machinery, dams, roads, and industry.

In believing the individual to be cut off from the rest of the natural world, Western thinkers emphasized the differences

between the human and all other species. Humans, it was said, were unique in their abilities to speak, to use tools, to create cultures, to control their environments, and to construct social systems. All other species were assumed to be directed by natural forces, like robots subjects to genetic and environmental programming lacking the power to choose.

Emphasis on human uniqueness was related to denigration of the merely natural, which included the human body. The Western ambivalence toward bodies, as old as St. Paul and before, enabled an identification of the "unique" human abilities of thought and speech with the head and the "beastly" emotional and physical needs and functions with the lower body.¹ Descartes crystallized this division with his distinction between "mind" and "body". Dewey pointed out that Western philosophy incorporated this assumed separation:

The isolation of man from nature is duly manifested in the split between mind and body, since body is clearly a connected part of nature.
(Dewey 1922, 85)

The simple assumption of the human individual as a real entity bounded by skin had many implications. At best it led to a preoccupation with language and thought to the exclusion of emotional expression and relationships. At worst, it led to a series of splits between mind and body, self and other, human and non-human, God-given and merely natural categories. Finally, this first assumption, when taken for granted, led to a set of assumptions about the process of communication.

1. Note that male ("rational") and female ("emotional") were also opposed.

- B. The second assumption is that communication is the transmission of a sequence of words from one individual to another.

If humans are conceived of as individuals bounded by skin and separated from each other and the rest of the universe, then communication becomes a problem of bridging the gap between individuals through space and over time. Communication is seen as a process of "getting a message across". It is further assumed that most if not all of these messages are verbal and are either encoded as words or can be paraphrased in words. Words, as signs of thoughts, are the only means of filling the silent space between individuals and thus the only real means of sharing experience. Gestures, smiles, music, paintings, and photographs are considered more means of emotional expression than of effecting a linkage, however, temporary, between two individuals, since emotions change and the thoughts encoded in words are timeless. The ancient philosophers can speak to us today through their writings, but the joys and fears of those not present can at best be described in terms that remind us of similar experiences we once had. We can communicate with the non-human world via words, by commanding trained animals to do their tricks, naming vast taxonomies of flora and fauna, and publishing enormous amounts of research on physical phenomena. The non-human world, in its turn, behaves. Without words, it is assumed, communication would be impossible. God's greatest gift to man is said to be his language -- and the greatest punishment was the division of a unified human group into language groups after the building of the Tower of Babel.

If human relationships are seen as built out of the transmission of words from one to another, then the quality of the relationship is judged by the amount and kinds of talking the two individuals give each other. An intimate relationship is one in which each partner can tell the other his deepest concerns -- he can tell the other "everything". Formal relationships are characterized by ritualized speeches containing little new information and in effect preventing the other from finding out one's "real" thoughts and feelings.

In addition, the occasions on which words "fail" the speaker are marked as intensely emotional. Some feelings are so deep and powerful that they seem "inexpressible" and the individual is seen as somewhat out of control due to the effects of his passions. His body becomes his primary means of communication, whether in the culturally acceptable expressions of love by intimate touching and sex, embarrassment by blushing, rage by flushing and fighting, and sadness by crying, or in the culturally unacceptable expressions of mental distress by public excretion, hysterical vomiting, flatus, and screams. While the lover who can sublimate his intense desires into poetry is considered conventionally, temporarily, and excusably unbalanced, the mental hospital patient who uses violence, spitting, avoidance of eye contact, and refusal to deliver the expected responses to questions is seen as pathologically uncontrolled and at the mercy of his nervous system and endocrine glands. Thus while people in some situations are expected to be unable to speak, others are locked up for what is thought to be their involuntary inability to express themselves in words.

Another implication of the evaluation of human relationships by the kinds and amounts of speech exchanged between partners is the marking of intimate relationships as those in which nonverbal communication is acceptable. Lovers communicate with a glance, for example. Touching is condoned between lovers, mothers and children, and in some subcultures, siblings. The mark of greatest intimacy is the ability to breach the skin boundary by sexual intercourse, "French" kissing, and exploration of the partner's orifices. While words keep people from dirtying each other with breath, mucous, sputum, or other physical elements which should remain "inside" the body, those who have achieved intimacy take pleasure in sharing their inner "contents" as much as possible. Mothers are said to not mind cleaning their babies' diapers; the dutiful child is said to wash an aging bedridden parent with love; and lovers have license to pass food from one mouth to another, for example. In recent years, these earmarks of intimate relationships have been taken as means to achieve intimacy in a curious reversal of ends and means, as lonely strangers attempt closeness by acting like those who are truly intimate, using physical penetration as a way to breach boundaries.

Words provide sanitary and controllable means of communication between non-intimate individuals. Messages encoded into sound waves can pass between individuals separated by millions of miles, if need be, with the aid of modern technology. Those who communicate with each other face-to-face in America tend to stand or sit a few feet away from each other, with increasing distance as a mark of increasing formality and social distance. Verbal communication is relatively long-distance communication, compared to the media of

sight, smell, taste, touch, heat, and pressure. The marriage of information theory developed by telecommunication engineers and the communication theory of the establishment was easily made due to this emphasis on speech communication and its function of crossing the space between individuals.

Words have the further advantage of allowing abstraction and distance from the immediate situation. The word is a special kind of sign because any word can be chosen to stand for an object or idea; words are arbitrarily linked to their referents. This distance of speech from experienced reality makes words the best means of expression of thoughts:

The comfort and advantages of society not being to be had without communication of thoughts, it was necessary that man should find some external sensible signs, whereof these invisible ideas, which his thoughts are made up of, might be known to others. For this purpose nothing was so fit, either for plenty or quickness, as those articulate sounds which with so much ease and variety he found himself able to make. Thus we may conceive how words, which were by nature so well adapted to that purpose, came to be made use of by men as the signs of their ideas; not by any natural connection that there is between particular articulate sounds and certain ideas, for then there would be but one language amongst all men; but by a voluntary imposition, whereby a word is made arbitrarily the mark of such an idea.
(Locke in Flew 1971, 316)

The implication is that individuals made agreements with other individuals that this word would stand for that object or idea, until gradually a common language and even a society was developed. This language enabled humans to abstract qualities from complex experiences and thus to create civilization and science.

The first and second assumptions about communication in the "psychological" paradigm are intimately related. If the human individual is seen as a unit bounded by his skin, containing private thoughts and feelings, then communication is seen as the making public of those thoughts and feelings by encoding them into a message which can travel the distances separating individuals from each other. Sound waves are an ideal medium for such distance communication. Their modulations permit the transmission of speech sounds which are the representations of words. Words traveling from one individual's head to another's allow sharing of thoughts which are timeless, general, abstract, and separated from the immediate physical environment. Further, speech communications allow individuals to coordinate their actions and participate in social and cultural patterns. Were it not for the gift of tongues, individuals would be doomed to a lonely, solipsistic, animalistic existence. Or, so it is assumed.

C. The third assumption is that communication is an intentional and conscious process.

We learn as Americans and Westerners to be responsible for our speech at an early age. Children are admonished not to lie, to speak clearly, to "make sense" with their words, and to use the conventional formulas such as "thank you" at the proper times. We are told to say what we mean and to mean what

we say. We are told not to contradict ourselves, to clear up ambiguities, to stand on our word, to carry out our promises, to refrain from libel and slander, to restrain our gossip, to suit the topic of our conversation to the people present and to the occasion, to laugh at the proper time when a joke-teller comes to the punch-line, to refrain from interruptions, to speak neither too softly nor too loudly, and to appreciate educated speech, for example. Merely speaking is much more of a moral action than we realize, as Goffman has pointed out:

It seems that when we are taught to make verbal statements, we are simultaneously taught that this means telling the truth with them, especially to persons who address us while directly looking into our eyes, although of course we are also taught that there is an array of good reasons for deceiving.... Words are mere and shouldn't be worth anything at all, but, in fact, every statement in one way or another, is a performative utterance.
(Goffman 1969, 129 and 136)

These moral expectations and restraints on speech are based on an assumption that the individual chooses what to say. It makes no sense at all, given this assumption, for a person to say one thing and mean another, except for the marked instance of double meanings which are generally obscene and accompanied by leers, winks, and grins. Blushing, stammering, and choking may be involuntary, but the words a person utters are thought to be produced with full intentionality. Slips of the tongue are interesting precisely because they appear without further examination to be remarks which the speaker did not intend to utter. Freudians retained the assumption of intentionality and explained

such slips as results of interference by subconscious processes with the normally conscious process of speaking.

We also assume that we are consciously aware of the words we use. A person who surprises himself with his utterance is admonished by others or by himself to "think before you speak" -- to rehearse and form his sentences before offering them for public consumption. Some philosophers built on this assumption their theories of thinking as nothing more than inner speech. Since a speaker is expected to pay attention to his own productions, one who finds himself committing grammatical errors will often apologize or quickly correct himself. Further, a speaker at a loss for a word will stop, almost visibly go through a selection process, and at times will involve his listeners in the search.

Therapists are specially trained to observe behavioral cues and to listen with "the third ear" for clues to their clients' unconscious processes, on the assumption that words are intentionally and consciously produced. Eye contact, tone of voice, posture, gestures, and other behavior become important sources of information:

Among humans the exchange of information involved in the therapeutic hour is based largely on verbal cues. It is the fashion to think of verbal behavior as essential in the therapeutic process, but the chances are that its role is not quite so significant. A general theory, particularly one ambitious enough to include unconscious processes, must explain changes where other sources of information are utilized. The necessity for other, broader sources of information requires observation of both verbal and nonverbal behavior. Thus, a person is seen as providing information by merely behaving; whether or not he verbalizes is not an

essential feature of exchange.
(Beier 1966, 4)

The emphasis on nonverbal or extralinguistic behaviors among therapists has led to slogans recently promulgated in the mass media such as "the body never lies" and "the truth of the body". "Body language" is said to reveal true feelings that words cover up. If speech communication is assumed to be intentional and conscious, then non-speech communication is assumed to be spontaneous, involuntary, and unconscious. If people are assumed to lie with words, then they are assumed to tell the truth with "body language". If speech is assumed to convey thoughts, then nonverbal communication is assumed to reveal feelings.

This dichotomy of conscious speech versus unconscious motion and intentional talk versus involuntary expression is a false one. Many of the processes involved in thought and speech are inaccessible to conscious awareness without intense and prolonged training. Phoneticians have to be made aware of the placement of their tongues and other organs of speech through practice in producing speech sounds of different languages. Freud was not the only observer to point out that consciousness is like the tip of an iceberg. Sense data are received in millions of bits in minutes by the body, yet we are consciously aware of only gross sensations of warmth, pleasure, or stress without biofeedback training or a long apprenticeship in one of the yoga disciplines. We, like the proverbial centipede, would find speech impossibly difficult if we were actually consciously aware of all

the physiological, physical, and mental processes involved:

Many problems arise because we all too frequently overlook the fact that our own and others' communication behavior is essentially automatos -- nonconscious, automatic, a matter of habit or preprogramming. (Thayer 1968, 343)

This third assumption is related to the previous two. If the human individual is perceived as a unit, and if speech is the means of communication between two individuals across a distance, then communication occurs when one individual wants to make contact with and get a message across to the other individual. The sender is then assumed to be responsible for the formation and delivery of his message of words. The receiver assumes that the message is what the sender intended him to hear. Finally, the receiver assumes that the message is informational in the sense that he is being told something which he didn't already know.

D. The fourth assumption is that communication can succeed or fail, and can be judged as good or bad.

If communication is seen as the transmission of a message intended by the sender to the receiver, generally through a verbal medium, then the act of communication succeeds if the original message reaches the receiver relatively intact and is properly understood. It is in this sense that people are urged to "try to communicate better" by changing their sending behaviors and improving the clarity of their messages. Failure of communi-

cation is assumed to be the blockage of a message so that it never reaches the intended recipient, the interference of noise with the transmission so that only a garbled version reaches the receiver, or the lack of clarity and coherence in the message as originally formed which prevents the receiver from properly understanding it. Silence, the refusal to send any message at all, is seen as a primary cause of failure in communication. Selective perception, inattention, and preoccupation on the part of the recipient can block communication with equal effectiveness, according to this view.

Successful communications, seen as completions of the transmission of a message from sender to receiver, can also be judged as better or worse on esthetic or other criteria. Each language group has its own standards of beauty and quality by which spoken and written messages are evaluated. In our own culture, a Shakesperian sonnet may be seen as more elegant and excellent a message than a rock opera, even if the same content is involved. In addition, standards of grammaticality, lexical flexibility, ease of delivery, and rhetorical flourishes influence our reactions to every spoken message.

Psychologists use a concept of "normal" or good and "abnormal" or bad communication for diagnosis and treatment:

...mental disease is intimately associated
with disturbances in sign behavior, language,
and communication...
(Ruesch 1966, 209)

and place emphasis on the patient's learning to improve his communication by increasing directness, honesty, and clarity.

For some therapists, the cure is effected in and through communication:

The whole task of psychotherapy is the task of dealing with a failure in communication....The task of psychotherapy is to help a person achieve, through a special relationship with the therapist, good communication within himself. Once that is achieved, he can communicate more freely and more effectively with others. (Rogers 1971, 182)

Educators also seek to improve their clients' communication. "English" classes often consist of lessons in proper punctuation, paragraphing, and spelling, for example. Students are expected to express their thoughts in speech and writing according to certain standards of performance. Much elementary school learning involves the communication skills of saying the right thing, in the right way, at the right time.

Those who communicate well receive many of this culture's awards, especially in recent years of mass media stars. Conversely, those who communicate poorly are stigmatized. Foreigners, children, the mentally ill, the handicapped, and those with little education are often victims of discrimination due to their inability to communicate as well as members of the culture are expected to. Punishment often involves violation of communication rights and privileges, as in solitary confinement, refusal of the right to speak with an official, and social isolation.

Finally, the assumption that communication can be better or worse leads to a normative view in communication research. Characteristics of "good" and "bad" senders, messages, and receivers are studied. Experiments comparing two means of communicating the same message -- often through different media -- are conducted. And certain communicational phenomena are simply ignored because

they are assumed at the outset to be examples of poor or failed communication.

E. The fifth assumption is that communication occurs in a unilinear sequence -- from sender to receiver -- involving a dyad.

In reporting a conversation to one who wasn't present, we often employ the formula: "I said...and he said... and then I said to him...so he said to me..." as if conversation were a series of unrhymed couplets. Some researchers have taken this assumption as a basic rule:

It is an easily noticed fact about two-party conversations that their sequencing is alternating...The abab formula is a specification, for two-party conversation: one party at a time.
(Schegloff 1968, 1976)

Even classroom discourse, which is characterized by its triadic sequence of teacher question, student answer, and teacher evaluation, assumes a single teacher and single student and one-way transmission of information between them (Grant 1971 and Sinclair and Coulthard 1975). An utterance by one participant is followed by an utterance by the other, which is followed by an utterance from the first:

A 'speech act'...initiated by one classroom participant, most frequently the teacher, is followed by a reply, most often from the students, which in turn is followed by an evaluation act.
(Mehan 1976, 28)

Some researchers picture the first utterance in a couplet as causing the second: questions necessitate replies, summonses lead to answers, and greetings obligate the hearer to return a greeting. Thayer pointed out the Newtonian imagery involved:

Behind most of the so-called communication models are the assumptive vestiges of interactionism, a world of masses and forces in which an action by one element 'causes' a reaction in another element.
(Thayer 1963, 225)

It is difficult not to assume that the utterance of "Hello" causes the return "Hello". One corrective step taken by some researchers is to move up one level and regard the question-answer couple as a single unit. Another is to assume that what appear to be couplets are actually steps in a larger behavioral program. But we lack the language to speak easily of multiple causation, multilinear transmissions of messages, and multiples of senders and receivers.

Given the assumptions of human individuals as bounded, real entities; of communication as the transmission of sequences of words; of communication as intentional and conscious; and of communication as something which is either successful or a failure, good or bad, this last assumption that communication consists of a one-way delivery of information from one member of a dyad to the second seems natural. If individuals are involved, then the minimal communication process involves one receiver in addition to the sender. If communication is intentional and conscious in nature, then basically one other individual is necessary to

comprehend the message sent in terms of the ideas intended. If communication requires a receiver to complete the circuit in order to be successful, then only one receiver is needed. If communication can be good or bad, then a second individual is required so that the message can be judged not only on its inherent qualities but also on its comprehensibility to another person. Finally, if communication involves the transmission of information, it is necessary to move the message only from the one who knows to the one who does not know. Thus, unilinear transmission of information between members of a dyad is implied in the other assumptions about communication.

F. The sixth assumption is that the communication researcher is outside the system he observes.

This last assumption is not about the nature of humans or the nature of communication, but rather about the necessary stance of the communication researcher in relation to his object of study. Cherry described this assumption that the communication researcher can be as distant from his phenomena as any other natural scientist:

The physical signs passing from the source to the receiver are called, by linguists and logicians in particular, the object-language. These are observed by the observer, who analyzes them, discovers rules and laws, and writes about them in Reports, in the Technical Press, and so on. Rules and laws are described in meta-language. This external observer...is utterly detached from the phenomenon he observes, as detached as an astronomer watching the stars; he takes no part, nor interferes in any way. He is watching as through a peephole.
(Cherry 1955, 49)

This assumption of detachment belies the fact that every communication researcher speaks at least one language, moves in at least one culturally-patterned way, and has trained his senses to selectively perceive in the ways that those around him perceive. Novice linguists are constantly amazed by the sounds they fail to hear when beginning work with a new language, simply because those sound units are not part of their native language pattern. The loss of visual, thermal, olfactory, and other kinds of information is that much greater and necessitates a lengthy period of acculturation before field notes and audiovisual recordings can be useful for research. No communication researcher can, by the simple act of entering a laboratory, automatically shed his cultural presuppositions about humans and communication. Objectivity results not from erecting equipment and physical distance barriers between researcher and subject, but by extensive training in the researcher's own communication patterns.

The communication researcher can assume himself to be a participant-observer, given the fact of his cultural loss of innocence in childhood. As Cherry pointed out, the participant-observer brings his own systematic bias to the research:

The participant-observer, like all of us, possesses an immense store of beliefs, from his past communicative activities -- beliefs about syntax, about different words and their uses, about different subjects of conversation, about his partner's background ...and, in particular, beliefs about his partner's beliefs; about his language, his interests, his accent; that is, about syntactic, semantic, and pragmatic aspects of the communication-event he is both enjoying and describing, as a participant-observer. (Cherry 1955, 66)

If human beings existed on the same scale as stars and shared the natures of celestial phenomena, the problem of a necessary lack of objectivity would arise in astronomy. The facts of difference of scale and nature and the inability of an astronomer to influence the behavior of stars allow him a detachment which human observers of humans can never hope to attain. It is virtually impossible for a communication researcher to attain communicatively neutral situations within which one variable can be manipulated, and always the mere fact of observation changes the behaviors observed.

4. Summary: the "psychological" paradigm.

This approach to communication research is characterized by its sender-message-receiver view of human communication. Definitions of communication in the literature emphasize one of these elements and utilize the language of various theoretical stances such as field theory or behaviorism. Essentially, underlying the variations is the assumption of a sender-message-receiver triad.

Four approaches within this paradigm were described. The first, the "traditional communication research" approach, involves the building of models incorporating the sender-message-receiver triad and also research which typically measures one variable of sender, message, or receiver. The second, the "information theory" approach developed by telecommunication engineers, emphasizes measurement of information (technically defined as the constraint on uncertainty) at the source, accuracy of transmission through a channel, and quantity of information received at the destination. It was noted that some models designed by researchers in the tradi-

tional approach incorporated the language of information theory. A third approach described was that of social psychologists interested in attitude change studies. Newcomb's "ABX" model of two persons and a mutual object of reference, linked by attitudes of like or dislike, and subject to strain toward balance, was described as typical for this approach. The fourth approach selected was that of small group communication network research, in which access of group members to each other while solving a group task was experimentally manipulated. These four approaches reflect the disciplinary membership of the researchers: traditional communication researchers tend to come from the fields of mass communication and speech communication; information theorists tend to be telecommunications engineers; social psychologists interested in attitude change tend to use the third approach; and small group researchers within the discipline of social psychology tend to use the fourth approach. Other approaches within this paradigm were not described; these four were intended as examples of the kinds of research questions posed within this paradigm.

Research within the "psychological" paradigm is better characterized by the assumptions held in common than by listing the topics studied within it. Five such assumptions were described. These were:

1. That human individuals are real, independent entities bounded by the opaque covering of skin.
2. That communication is the transmission of a sequence of words from one individual to another.
3. That communication is an intentional and conscious process.

4. That communication can succeed or fail,
and can be judged good or bad.
5. That communication occurs in a unilinear
sequence -- from sender to receiver --
involving a dyad.

In addition to these assumptions about human nature and the nature of communication, a sixth assumption about the relationship of the communication researcher to his object of study was described:

6. That the communication researcher is
outside the system he observes.

These assumptions predetermine to a large extent the kinds of questions that will be asked, observations that will be made, and research designs that will be chosen. The system of assumptions forms a context within which definitions of the concept of "communication", postulations of variables, hypotheses and theories, and experimental verification make sense. Since these assumptions are often made implicitly, the researcher consulting other reports is often unaware of his colleague's initial stance. A second danger resulting from refusal to make assumptions explicit is that the lay understanding of communication will be imported without question into the inquiry. Communication research then becomes a matter of simply proving what we all already know. Yet scientific advances have come from assumptions of a universe which is counter-intuitive, strange to our daily experience, and often at variance with our cultural beliefs about how the world is put together. Failure to examine assumptions about humans and communication leads to research which is neither scientific nor informative.

The assumptions listed here as characteristic of the "psychological" paradigm are more like cultural framework understandings than theoretical postulations because they are more often on the level of belief than of hypothesis. Even when a researcher in this paradigm publishes an article on the concept of communication, or offers a new theory or model of communication, most of these basic assumptions remain unquestioned and factors of the presence or absence of a feedback loop or the possibility of multiple receivers are consciously manipulated.

While a few "psychological" researchers, notably Lee J. Thayer, have been able to describe the implicit framework of communication research in metalanguage, researchers in the "social" paradigm can perhaps see it most clearly. The assumptions listed in this chapter have been discussed by Ray Birdwhistell, Albert Scheflen, Gregory Bateson, and others, as the next chapter will show.

In this chapter we have moved from the initial separation of metacommunication into "psychological" and "social" to subdivisions of the "psychological" half, into research approaches and into assumptions. These divisions can be diagrammed as follows:

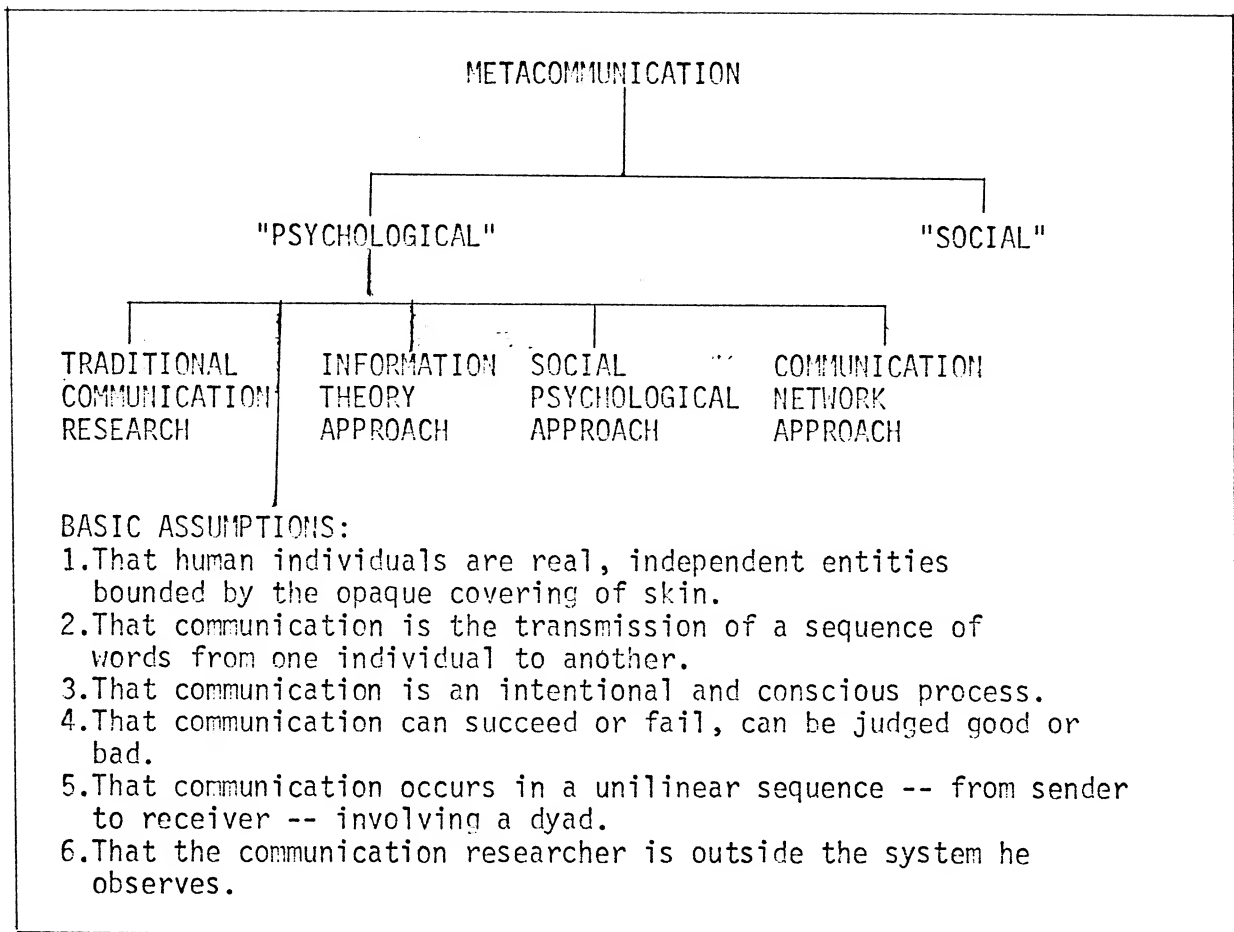


FIGURE III-10: "Psychological" division of metacommunication

The next chapter describes similar subdivisions of the "social" paradigm.

CHAPTER THREE

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Every mortal nature, being in the middle of coming-to-be and passing away, provides a phantom, a dim and uncertain apparition of itself...for it is impossible to step twice into the same river according to Heraclitus, or to lay hands twice on mortal substance in a fixed condition; but by the swiftness and speed of its change IT SCATTERS AND again GATHERS, or rather not 'again' or 'afterwards', but at the same time IT COMES TOGETHER AND FLOWS AWAY, and APPROACHES AND DEPARTS.
 (Fragment from Heraclitus, in capital letters, quoted by Plutarch. In G S Kirk (1954) Heraclitus: the cosmic fragments. Cambridge: Cambridge University.)

According to my whole biological outlook, I am rather committed to the ancient Heraclitean concept that what is permanent is only the law and order of change.
 (Ludwig von Bertalanffy (1974) General system theory. New York: Braziller.)

CHAPTER FOUR

THE "SOCIAL" APPROACH

Communication can be defined, then,
as the integrated system of behavior that
mediates, regulates, sustains, and
makes possible human relationships.
(Scheflen 1965, 27)

1. Defining "communication" from the "social" point of view.

Since the majority of research definitions in the literature fall within the "psychological" paradigm, it is difficult to find and characterize "social" definitions. Such a definition would be like what Carey called a "ritual" one:

In a ritual definition, communication is linked to such terms as sharing, participation, association, fellowship, and the possession of a common faith. This definition exploits the ancient identity and common roots of the terms commonness, communion, community, and communication. A ritual view of communication is not directed toward the extension of messages in space but the maintenance of society in time; not the act of imparting information but the representation of shared beliefs.
(James Carey 1975, 6)

"Social" definitions do not rest on the assumption of a sender-message-receiver triad; they assume rather multiples of senders, messages, receivers, media, times, and directions. Such complexity is difficult to diagram. One attempt at such a diagram follows in Figure IV-1:

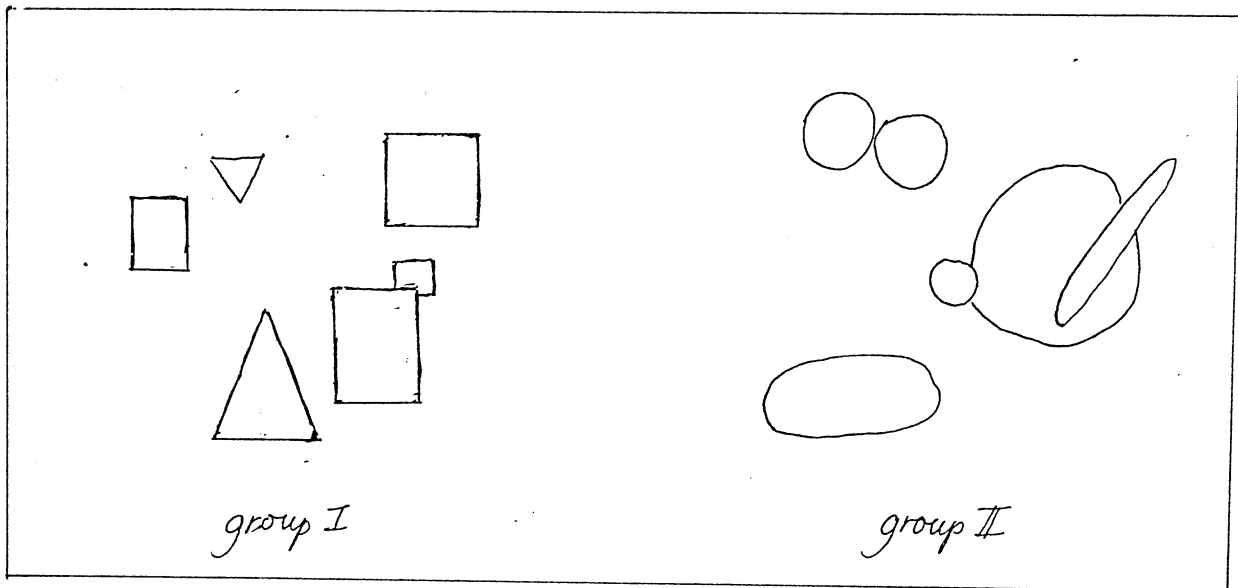


FIGURE IV-1: DIAGRAM OF "SOCIAL" PARADIGM BASIC COMMUNICATION MODEL

In such a model it is the patterns of the relationships which form the structure of the group's social and communicational structure; these, and not the individual organisms, are of interest. While the "psychological" paradigm assumes real, individual senders, messages, and receivers, the "social" paradigm deals with phenomena of a different level of group interrelationships.

The terms "communication", "message", and "information" have different meanings in this context. The "social" paradigm supplies a second universe of discourse:

The condition of the meaningfulness of an assertion or proposition is, then, not that certain entities about which the assertion is made exist, in the sense of being empirically verifiable, but that the universe of discourse in which those entities have their existence is mutually acknowledged.
(!! Urban 1961, 201)

While researchers using the "psychological" and "social" paradigms

may use the same terms, such as "communication", the contexts or universes of discourse within which those terms have meaning are so different that the phenomena referred to are neither identical nor similar. In order to understand the "social" definitions of "communication", the researcher must first comprehend the context within which the term is used and the level of analysis implied.

"Communication" in this paradigm is not the expression of an individual's thoughts to another individual nor is it the transmission of a message from one member of a dyad to the other. Both Dewey and Mead highlighted the difference by stressing communication as a means of social cooperation:

The heart of language is not 'expression' of something antecedent, much less expression of antecedent thought. It is communication; the establishment of cooperation in an activity in which there are partners, and in which the activity of each is modified and regulated by partnership.
(Dewey 1929, 179)

We want to approach language not from the standpoint of inner meanings to be expressed, but in the larger context of co-operation in the group taking place by means of signals and gestures. Meaning appears within that process.
(G H Mead 1934, 6)

In the "social" paradigm, not the individual but the social group is taken as a basic unit or black box. The network of interrelationships within the group, seen as a dynamic system through which information flows from many to many, many to one, one to many, and one to one through various channels and at various times, is the object of study, rather than a single message. Finally,

"social" definitions of communication assume a ritualization of communication processes so that communicants are viewed as participating in ongoing programs rather than as creating regularities word by word or gesture by gesture.

2. "Communicational" and "social".

Difficulties with bounding the concept of "communication" have been noted above (see pages 20-22). An additional problem is raised by relating communicational to social phenomena: are the two identical, coextensive but separate, different and nonoverlapping, or subsets of a larger set? The problem is solved differently by different researchers.

One solution is to claim that all behavior which is social is automatically communicational, and vice versa. In this view, any behavior which functions to relate members of a group is both social and communicational no matter how tiny or gross or what media are involved. Communication then is distinguished from "asocial" behavior. The burden of proof lies on the researcher, who must show that the behaviors under study do function socially and communicatively.

A second solution is to see communicational and social phenomena as coextensive but separate. In this case, behaviors which can be shown to function to relate members of a group are social and the same behaviors analyzed on a different level are communicational. The boundary lies between "communicational" and "noncommunicational" behaviors rather than between "communicational" and "social", and the criteria for including any phenomena within the "communicational" realm differ from criteria

for inclusion in the "social" realm, although in practice the same phenomena are included in each.

A variation on this approach is to view either social or communicational phenomena as a subset of the other: not all social phenomena are communicational, or not all communicational phenomena are social. Information theorists, for example, speak of machines and cells communicating information but do not claim that these transmissions create social relationships. On the other hand, researchers who limit communication to the transmission of verbal messages place nonverbal behaviors in the social but not the communicational categories.

A third solution is to completely separate communicational from social phenomena. If communication is the transmission of information, then social relationships consist of noninformative exchanges; or if communication implies intentionality, then social relationships are involuntary; or if communication involves agreements on the usages of words, then social relationships never involve such agreements and simply employ words as unquestioned elements.

Finally, communication and the social realm may be seen as two subsets belonging to a larger set, which may be called "culture". The two subsets may be the same or different, overlapping or mutually exclusive, or different in degree or kind, depending on the researcher.

Failure to relate the concept of "communication" to the concept of "social" phenomena leads to confusion. Few communication researchers are prepared to describe the network of concepts

relating the communicational, the social, and the cultural dimensions of human behavior with enough clarity to avoid this confusion. In choosing to use the "social" paradigm, then, the researcher adds the problem of distinguishing or relating the social and the communicational to the conceptual difficulties which already surround the concept of "communication".

3. Approaches to communication research within the "social" paradigm.

I will describe about a half-dozen different approaches used by researchers in this paradigm which reflect their disciplinary orientations. These approaches are presented as examples of the kinds of studies conducted within this paradigm and are not intended to be exhaustive reports of all "social" communicational research.

One approach is that of the "Dramatistic" school of which Kenneth Burke is most representative. Burke starts with a communicational act which implies social actors. An act is communicational because it occurs within the context of a social ritual or drama and involves particular roles. The actors employ symbols with social significance. The model is a verbal one:

FIRST
APPROACH

An act, as Burke describes it, is a certain kind of act. It is performed by certain kinds of people, with certain instruments or means, and for certain purposes. These elements -- Burke calls them Act, Scene, Agent, Agency, Purpose -- are the structure of the act.
(H D Duncan 1962, 147)

Duncan expanded Burke's model by describing the use of money and art as symbolic communication in addition to verbal symbols. In his view, the social actor communicates symbolically with the hierarchical structure of his society and participates in a social play with each communication.

A second and closely related approach is that of the symbolic interactionists. George Herbert Mead and his colleagues at the University of Chicago postulated the development of human communication as a process of learning to respond to one's own behavior from the point of view of the other members of the social group:

SECOND
APPROACH

Gestures become significant symbols when they implicitly arouse in an individual making them the same responses which they explicitly arouse, or are supposed to arouse, in other individuals, the individuals to whom they are addressed; and in all conversations of gestures within the social process...the individual's consciousness of the content and flow of meaning involved depends on his thus taking the attitude of the other toward his own gestures. In this way every gesture comes within a given social group or community to stand for a particular act or response.... and this particular act or response for which it stands is its meaning as a significant symbol. (Mead 1934, 47)

Rather than a view of communication as the verbal expression of ideas, the symbolic interactionists stressed their conception of communication as social interaction through significant symbols, symbols made significant not because of the sender's ideas but because of the sender's ability to see his own behavior through the eyes of those to whom he is socially bound. Mead used the example of two snarling dogs circling each other

prior to combat as a "conversation of gestures" through which the dogs adjusted their behavior by reacting to growls, hair bristling, teeth-baring, and other gestures. Such a gestural communication lacked the dimension of reflexive awareness which characterizes communication by significant symbols, since neither dog can imaginatively perceive himself from the standpoint of the other. Man's ability to see himself from both the inside and the outside, to take the standpoints of both the personal and the social, leads to symbolic interaction.

The symbolic interactionist school understood the social and the communicational as two facets of one reality. Symbols, according to them, did not exist in isolation and had no meaning apart from their use by socially bound people. Duncan pointed out that symbolic interactionists such as Mead successfully described how symbolic communication implied social interaction:

Dewey, Cooley, and Mead taught that society not only continues to exist by transmission, by communication, but in transmission, in communication of what Mead called 'the significant symbol'. Frazer, Kroeber, Malinowski, and later Sapir and Whorf taught that social relations exist in a cultural context, which is symbolic. Freud taught that social relations were determined by a familial context. Marx taught that property relations were determined by social relations. Simmel argued that the purely formal qualities of social relations determined the nature of our social bonds. Durkheim held that 'collective representations' determined the 'social matrix'. Max Weber argued that structures of social action determined our social relations. Dilthey, Burkhardt, Huizinga, Sorokin, Spengler, and Cassirer stressed interrelationships between expressive symbols and society. But Mead and Burke showed how symbols created the effects they were supposed to create as symbolic forms.
(H D Duncan 1967, 250)

While Burke's Dramatistic model emphasizes participation of social actors in ritualized dramas, Mead and other symbolic interactionists emphasized meanings of symbols as the property of members of an entire social group, a group whose point of view the creator of a message took with each communication act. The two views are complementary and closely related. Both fuse symbols with society. The difference is one of emphasis: Burke on actors, and Mead on the audience as a "generalized other".

A third approach to communication within the "social" paradigm is the "behavioral program" approach. Scheflen's work is representative. An observer of a standard social interaction -- a psychiatric interview, a church service, or a classroom lesson, for example -- discovers after a period of prolonged observation that the events he sees are familiar and to some extent predictable. He develops a sense of what will happen when, what sorts of roles are available to the participants, and what phenomena can be used as punctuation marks dividing the interaction into scenes and acts:

THIRD
APPROACH

It is when you have watched the stream of behavior 30, 50, or more times that the pattern will begin to be evident. Dozens of microbehaviors will be seen to recur in the same sequence, and this sequence as a whole will be repeated. You will see sequences in one person's acts, sequences between participants, progressions from one type of activity to another. There will not emerge a single pattern, but patterns of patterns. (Scheflen 1968, 45)

Such programs, like unwritten orchestral scores, can be recorded with parts for different players in diagrams such as the one below:

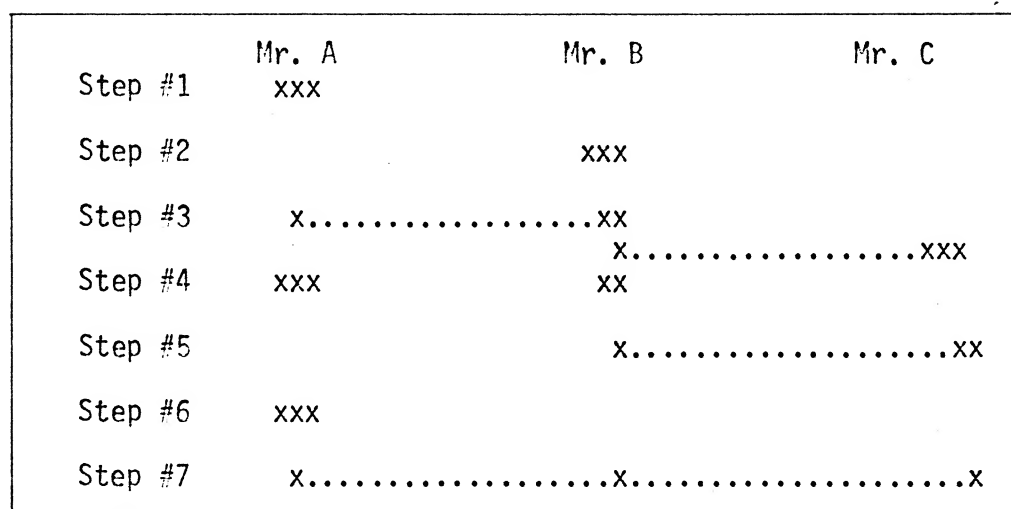


FIGURE IV-2: A BEHAVIORAL PROGRAM
(Adapted from Scheflen 1964, 33)

In such a diagram, the "x's" represent behaviors, verbal or nonverbal. Note that a behavioral unit may be a single action by one participant or, like a duet and trio, have component behaviors from two or three participants. Rather than each event occurring in sequence -- first Mr. A, then Mr. B, and then Mr. C -- the behaviors overlap at times, as in music theme and counter-theme occur at the same time but with patterns of interplay.

Goffman pointed out that participants in an interaction come to an agreement about the program they will follow and continuously monitor their own and each other's behavior to see that the program is followed correctly. He called these implicit understandings "frames":

Given their understandings of what it is that is going on, individuals fit their actions to this understanding and ordinarily find that the ongoing world supports this fitting. These organizational premises -- sustained both in the mind and in activity -- I call the frame of the activity.
(Goffman 1974, 247)

Both Schefflen and Goffman assume that regularities of social behavior are not only describable but also coercive and moral, since once a program has been entered upon, and the frame understanding agreed upon, participants make efforts to sustain the activity and understandings until the program has run to its close. They agree that the program and frame, like an orchestral score, can be described apart from the particular biological individuals involved. They point out that the beginnings, endings, and internal scenes within such programs are often marked by behaviors which serve as punctuation. And they show that the knowledge of programs and frames which every social actor has is often implicit and difficult to tease out without prolonged and disciplined observation of patterns.

The "behavioral program" approach is closely related to a fourth approach, ethnomethodology. Ethnomethodologists study the processes by which social participants make sense of their own activities. They ask such questions as: how do conversationalists know that a joke is being told and when to laugh? How do speakers know when to yield the floor to others? How do members of a bureaucratic organization make sense of records and reports by using implicit information? An ethnomethodological study of the classroom asked:

FOURTH APPROACH

What must students need to do to be competent members of the classroom community?
 What skills and abilities must students employ to be judged successful in the eyes of other members of the classroom community, especially the teacher?
 (Mehan et al 1976. 161)

They discovered that students had to master not only the content of the lesson, but also the display of this mastery:

That is, to be a competent respondent in classroom lessons, students must be able to tell the difference between Directive, Informative, and Elicitation speech acts, and provide the proper replies (reactions, acknowledgments, and responses) on the right occasion in order to produce symmetry between Initiation and Reply acts.
(Mehan et al 1976, 163-4)

Ethnomethodology is a form of participant-observation research in which the inquirer attempts to discover the subjects' views of their own activity; rather than supplying their own explanations of the rationality of behaviors, ethnomethodologists hope to show the participants' achievement of rationality. If Goffman's and Scheflen's question is: what is going on here?, the ethnomethodologists' question is: how do these people make sense out of what they're doing?

A fifth approach within the "social" paradigm is the human ethological. In this view, human behavior can be explained, in part (human ethology) or wholly (sociobiology) as the result of genetically-governed behavioral programs evolved by the species. Social communication functions to maintain the group as a viable organization of organisms. Human communication is viewed from the perspective of biology:

FIFTH
APPROACH

Observing behavior as it occurs in everyday surroundings, examining it in terms of its ultimate adaptive value for the species as well as its proximate adaptive value for the individual, studying behavior patterns comparatively by demonstrating analogous behaviors in other species,

searching for phylogenetic reasons underlying needs and need-associated behavior patterns, identifying contemporary ecological factors which may account for inter-species resemblances and differences, seeking cross-cultural universals in behavior, and developing 'standard' definitions, glossaries, dictionaries, taxonomies, and film archives of behaviors (that everyone can use) --these are the major research activities of most ethologists.

To date, the substantive focus of ethologists has been upon social behavior. Thus, their research topics include courting, bonding, reproducing, early experience, caring for offspring, parent-child interactions (with emphasis on separation and greeting), peer relations in preschool children, behavioral differences between normal and problem children, and cross-cultural comparisons in early behavior and caretaking.
(Charlesworth 1975, 1-2)

Some human ethologists deny the importance of cultural variation relative to the influence of genetic control of behavior:

At first glance the bewildering variety of customs suggests that humans can invent any kind of culture with any kind of process. But on closer scrutiny it turns out that while the variations are almost endless, the themes are restricted in number, and are, in all cultures, the fixed points on which the system turns.
(Tiger and Fox 1971, 10-11)

These fixed points are, of course, biological and genetic. Yet others have noted the immense variation in even what were thought to be natural and involuntary aspects of human life, attributable not to genes but to culture:

There is a vast number of neurological functions of the central nervous system which different cultures have programmed in their own specific ways by the unique environment they provide for the growth and development of their children. These include the style of neuromuscular coordination in fine and gross movement, even at the level of speech and eye movements;

styles of posture, gait, stance, climbing, and swimming, etc.; modes of nonverbal communication including gesture and dance; use of language, at times polylinguality; the form of the body image; sense of time, space, rhythm, and tone; color sense and acuity of smell and taste, hearing and vision; conceptions of quantity and number, methods of counting (some nonverbal), and processes of reasoning and reconning and computation; styles of symbolic representation in play or drawing; patterns of sexual responsiveness and behavior; mnemonic mechanisms; and even methods and mechanisms of imagery and imagination, reverie, trance, and dream. (Gajdusek 1963b, 556)

The key concept for ethologists is the ritualization of behavior. Darwin pointed out that emotionally expressive patterns in animals and human animals developed from movements which were first only strictly functional but through time became habitual and then instinctive as they served as signs of the individual's state. Thus the contraction of the muscles surrounding the eyes at one time functioned to counteract increased pressure of blood-engorged eyeballs in states of high excitement such as crying, but gradually this muscular contraction, a secondary effect, became a habitual and then expressive sign of discomfort -- the frown. While Darwin's idea of habitual behavior becoming instinctive was later discredited, the concept of ritualization of behavior was elaborated by such ethologists as Lorenz and Tinbergen. Just as the cardinal's crest, the peacock's tail, and the zebra's stripes evolved as exaggerations of body parts to aid survival and intra-species behavioral regulation, so, said the ethologists, exaggerations of behavior evolved into ritualized activities with a new significance:

To paraphrase Julian Huxley (and the ethological position), the basic argument is that under the pressure of natural selection certain emotionally motivated behaviors become formalized -- in the sense of becoming simplified, exaggerated, and stereotyped -- and loosened from any specific context of releasers, and all this so that, in effect, there will be more efficient signalling, both inter- and intra-specifically. These behaviors are 'displays', a species-utilitarian notion that is at the heart of the ethological conception of communication. Instead of having to play an act, the animal, in effect, provides a readily readable expression of his situation, specifically his intent, this taking the form of a 'ritualization' of some portion of the act itself, and this indication (whether promise or threat) presumably allows for the negotiation of an efficient response from, and to, witnesses of the display. (Goffman 1976, 69)

The displays, or ritualizations of behaviors, in both animals and human animals are said by some ethologists to be triggered by highly specific stimuli, so that the hungry animal searches for food, fighting behavior is set off by adoption of threatening postures, and maternal behavior is released by stimuli of eggs or the soft, rounded contours of the young -- and the proper behaviors are triggered at the proper time by environmental or hormonal signals which evolve along with the ritualized behaviors. Thus one animal's display can serve as a releasing mechanism for the other. The famous bee dance, for example, "releases" food-gathering activity in the bees at the hive. One display can set off another, as when a pair of fighting fish become more highly colored and increase their threatening postures. If every animal of the species, even when reared in total isolation, exhibits the same display in response to the same stimulus, then, argued Lorenz, the displays must be under genetic control. He hypothesized that some human behavior

could be explained in these terms: the behavior of protectiveness toward infants and small animals may be triggered by the large head, large eyes, round cheeks, short and thick limbs, and clumsy movements of the young (Lorenz 1971, 154). Others have attempted to explain human aggressive and affiliative behavior in terms of such innate releasing mechanisms (Eibl-Eibesfeldt 1971).

The most adequate explanation of human behavior is one that incorporates both biological and cultural factors, since we have noted the great variability in behavior attributable to cultural influence. Goffman offered an approximation to such an integrated view:

A version of display for humans would go something like this: Assume all of an individual's behavior and appearance informs those who witness him, minimally telling them something about his social identity, about his mood, intent, and expectations, and about the state of his relations to them. In every culture a distinctive range of this indicative behavior and appearance becomes specialized so as to more routinely and perhaps more effectively perform this informing function, the informing coming to be the controlling role of the performance, although often not avowedly so. One can call these indicative events displays.
(Goffman 1976, 69)

The ethological approach incorporates the concept of behavioral programs but attributes their development to evolutionary and biological, as well as cultural, influence. As with the other approaches described in this section, the ethological approach assumes that social relations are integrally related to communication.

A sixth approach is the linguistic, a term which covers a broad field. The linguistic approach to communication studies does not simply mean that only verbal expressions will be analyzed. Sociolinguists, for example, study both language uses and social relations and correlate the two kinds of phenomena. Structuralists describe the form of communicational processes using methods developed for the description of the form of language. Semioticians view communicational phenomena -- signs -- as functioning in the ways in which language signs function. (Watt 1977, 702). Descriptive linguists posit a communicational system within which spoken communication is only one kind and which can be described in toto by methods developed for linguistic research, including both form and function. The diversity and rapid theoretical changes in linguistics are reflected in diverse linguistic approaches to communicational phenomena.

Sociolinguistic studies relate communicational (generally verbal) and social variables. Such phenomena as shifts from the use of one language or dialect to another in different social situations; loyalty to or abandonment of the native language by migrants; terms of address to social peers, inferiors, and superiors; the language of religious possession; and adjustments of speech to fit audience, situation, and topic are described. While some sociolinguists view social relations and linguistic behavior as equal but separate, others see them as complexly interrelated:

Sociolinguistics is the study of the characteristics of language varieties, the characteristics of their functions, and the characteristics of their speakers as these three constantly interact, change, and change one another within a speech community. (Fishman 1972, 4)

Hymes developed what he calls "the ethnography of communication" as a field in which social and communicational phenomena are viewed as integrally related:

...(a) a social relationship entails the selection and/or devising of communicative means considered appropriate and perhaps specific to it; (b) the communicative means will thus be organized in ways not disclosed apart from the social relationship; (c) the communicative means available in the relationship condition its nature and outcome.
(Hymes 1966, 9-10)

While sociolinguists tend to relate "the social" to "the communicational", ethnographers of communication describe social and communicational as components of one system.

This relating of language to social systems is one form of a contextualist school of linguistics. Firth and Malinowski were not the first to point out that every utterance is made in a context. Not content with expanding the context to description of personnel, roles, and rules, Malinowski called for description of social, cultural, physical, and physiological phenomena involved in communication -- or, the "context of situation":

I think that it is very profitable in linguistics to widen the concept of context so that it embraces not only spoken words but facial expression, gesture, bodily activities, the whole group of people present during an exchange of utterances, and the part of the environment on which these people are engaged.
(Malinowski 1935, 22)

His description of magical formulas used in gardening by Trobrianders, for example, encompasses cultural beliefs, social structure, botany, and detailed observations of the planting and other physical activities.

Some linguists, however, found their greatest successes in the description of form, and either postponed or denied the study of social or other contextual phenomena. In this country, a tradition starting with early Bloomfieldians and continuing through Chomsky's revolutionary Cartesian theory of abstract deep structure linguistic forms, which can be termed a structuralist tradition, emphasized form almost to the exclusion of function and context. Labov called this the "asocial" school in his division of theories of language change:

Linguists of ...the 'asocial' group,
 focus upon purely internal -- structural or
 psychological -- factors in explaining change;
 segregate affective or social communication from
 the communication of 'ideas'; believe that sound
 change in progress cannot be studied directly,
 and that community studies or dialect maps show
 nothing but the results of direct borrowing;
 they would take the homogeneous, monolingual
 community as typical, working within the Stammbaum
 model of linguistic evolution.
 (Labov 1972, 264)

Dr. Mead pointed out that by simply assuming that language was the only means of communication which could be described as patterned and thus separating linguistic studies from all other communicational studies, linguists lost the opportunity to describe cultural patterning of other kinds of communication and made the mistake of identifying language as the means of communication:

By the isolation of linguistics from the study of the rest of culture...we have lost in a sense our capacity to look at other systemic aspects of human behavior so that the argument in anthropology at present...is this: Yes, of course we know that language has grammar; language is systematic and linguistics can study it. It is something that is in a nice little box. The rest of human behavior, however, is regarded as subject to some completely nonsystematic set of principles which make cross-cultural comparisons impossible, ...whereas if one says that language as we know

it, and other systems of communication between people, other methods, parts of behavior, all of which involve the whole body, are all systematic, because they can be referred to the human organism; then it is possible to make the sort of cross-cultural comparisons that you are asking for and to use the uniqueness of each culture only as a point of reference for particular observations within the culture, so that false equations are not made from one to another. (Mead in von Foerster 1952, 64)

The description of forms of communication based on description of linguistic form proved extremely useful for several purposes: recording of languages whose speakers were fast dying out; comparisons of different languages; development of dictionaries and grammars; and establishment of linguistics as a social science rather than a branch of philosophy or the humanities. Yet in addition to the syntactic aspects of communication -- the signs and their relations to each other -- there are semantic, or aspects of use and meaning, and pragmatic, or aspects of speakers and situations, realms. Today the discipline of linguistics is burgeoning with semantic and pragmatic as well as syntactic studies, and there is some hope that all three aspects will be related to each other rather than developed in isolation.

Figures IV-3 and IV-4 are examples of models of communication (verbal) from the structural linguistic point of view. Figure IV-3 is Chomsky and Halle's chart of features which are thought to be universal attributes of all linguistic sounds. Figure IV-4 comes from the descriptive linguistic tradition. It shows Whorf's formula for the combinations of consonants in English single-syllable words. It captures the occurrence of such strings as "str" at the beginning but not end of such a word, and the non-occurrence of such strings as "mb", "ld" or "pt" word-initially in English.

	anterior	coronal	high	low	back
CONSONANTS					
labials	+	-	-	-	-
dentals	+	+	-	-	-
palato-alveolars	-	+	+	-	-
(does not exist)	-	-	-	-	-
palatalized labials	+	-	+	-	-
palatalized dentals	+	+	+	-	-
palatals	-	-	+	-	-
velarized labials	+	-	+	-	+
velarized dentals	+	+	+	-	+
velarized palato-alveolars	-	+	+	-	+
velars	-	-	+	-	+
(?) uvularized labials	+	-	-	-	+
(?) uvularized dentals	+	+	-	-	+
uvulars	-	-	-	-	+
pharyngealized labials	+	-	-	+	+
pharyngealized dentals	+	+	-	+	+
pharyngeals	-	-	-	+	+
VOWELS (nonretroflex)					
high front	-	-	+	-	-
high back	-	-	+	-	+
mid front	-	-	-	-	-
mid back	-	-	-	-	+
low front	-	-	-	+	-
low back	-	-	-	+	+
GLIDES					
y	-	-	+	-	-
w	-	-	+	-	+
h, ?	-	-	-	+	-
LIQUIDS					
dental	+	+	-	-	-
palatal	-	-	+	-	-
uvular	-	-	-	-	+
palato-alveolar	-	+	+	-	-

FIGURE IV-3

Feature composition of
the primary classes of
speech sounds
(Chomsky and Halle 1968,
307)

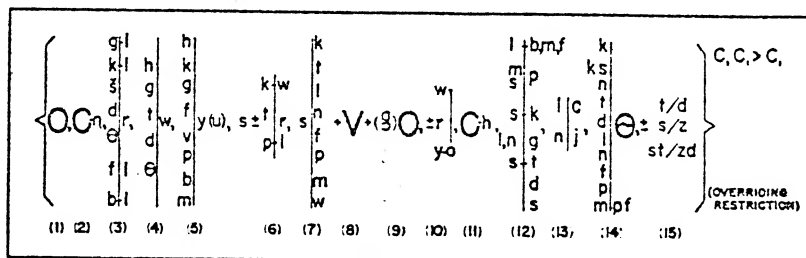


Figure 12. Structural formula of the monosyllabic word in English (standard mid-western American). The formula can be simplified by special symbols for certain groups of letters, but this simplification would make it harder to explain. The simplest possible formula for a monosyllabic word is $C + V$, and some languages actually conform to this. Polynesian has the next most simple formula, $O, C + V$. Contrast this with the intricacy of English word structure, as shown above.

Figure IV-4:
Benjamin L Whorf's chart of phonological
sequential constraints for English
(From Whorf 1967, 223)

(This chart summarizes the information about permissible consonant clusters in English words; "spr" and "gl" can occur, while "dkr" or "pm" cannot.)

Semiological or semiotic studies of communication focus on sign systems. Not all researchers who identify themselves as semioticians use linguistic methodology or assume that human communication is patterned in the same ways as language. Semiotics as a field is loose and varied:

Even today, semiotics lacks a comprehensive theoretical foundation but is sustained largely as a consistently shared point of view, having as its subject matter all systems of signs irrespective of their substance and without regard of the species of emitter or receiver involved.
(Sebeok 1968, 7)

Semiotic studies of communication thus range from descriptions of the circus, mime, and art to analysis of folk tales and linguistic performatives. Gardner noted:

Semioticians can be divided, roughly speaking, into those who focus on the individual symbol user, and those who focus on the cultural context within which symbol use unfolds; those who focus on microgenesis (the stages which unfold over a brief compass of time) and those who examine macrogenesis (the evolution of symbolic understanding over the course of years or even centuries); those who investigate the formal characteristics of symbol systems and those who ponder the biological prerequisites or underpinnings of symbolic activity; those who see symbolism as an inevitable emergence, and possibly even an innate human characteristic, as contrasted with those who adopt a more empirical and tentative stance vis-a-vis the emergence of symbolic behavior; those who regard the emergence of symbolic activity as a qualitative leap in individual and cultural evolution, as compared with those who view semiotic skill as a more natural, gradual, and quantitative transition in the development of organisms.
(Gardner 1976, 23-24)

Ferdinand de Saussure was the most influential linguistic semiotician. He adumbrated, in his lectures, a science which would study signs in all modalities as systems of communicational units. His distinctions, such as that of langue and parole, and that of paradigmatic versus syntagmatic relations, are still basic. The semiology he envisioned would encompass the cultural contexts and social uses of sign systems; both micro- and macro-genesis; and both formal and functional aspects of signs:

A science that studies the life of signs within society is conceivable; it would be part of social psychology and consequently of general psychology; I shall call it semiology (from Greek semeîon 'sign').
Semiology would show what constitutes signs, what laws govern them...Linguistics is only a part of the general science of semiology.
(de Saussure 1966, 15-16)

Fourthly, the descriptive linguistic school developed in America in the middle third of the twentieth century created a theory of human social communication which utilized a hierarchical and analytic methodology. The distinction between "etic" and "emic" phenomena was basic to this school. Briefly, "etic", a term created by Kenneth Pike as an abstraction from such linguistic terms as "phonetic", refers to initial transcriptions of the utterances of a language, generally made with the symbols of the International Phonetic Alphabet which are intended to allow relatively objective notation of any language sound in the world in articulatory terms. When the linguist or communication researcher first approaches a new language or other communication system, he attempts to record the audible, visible, and other behaviors with relatively little analysis and as much

emotional distance as possible. At this point, the researcher takes the stance of a physicist or astronomer toward his data, and aims for transcriptions which any other linguist would replicate.

Linguistics and other communicational sciences, however, require the researcher to take a second step and move from the "etic", or his initial descriptive frame, to the "emic". The adjective "emic" was abstracted from such terms as "phoneme" and "morpheme" and reflects the fact that each social/communicational group selectively perceives and produces sounds and other communicational behaviors which are "chunked" into units. The vowel sound which speakers of American English identify as "o" as in "hope" will be identified as a different sound -- a different phoneme -- in another language. While every human in the world can (barring physical defects) produce a continuous range of vowel sounds from high in the mouth to low and from front to back, the languages of the world divide these continua into units, the phonemes, in different ways. The descriptive linguist aims to learn this perceptual and articulatory system and thus describe the language as if from a native speaker's point of view -- i.e., to break up the continua of potential sounds into the units perceived by the people he studies. He attempts to identify the particular ranges of the vocal continua which each unit includes, using the language of phonetic description.

When the sound units or phonemes have been described, the linguist next describes the larger units of which the phonemes serve as building blocks. For English, such larger units are syllables, words, phrases, clauses, sentences, paragraphs, and discourses, for example. On each level of the hierarchy, units for that level are described and their relations to each other made explicit.

The descriptive linguistic school developed an approach using units and hierarchy as basic concepts with which all human social communication might be described. Edward Hall used the approach in his work on proxemics, or patterned use of spatial communicational modalities. Ray Birdwhistell found etic, emic, and hierarchical aspects of body motion communication and developed the science of kinesics. But a complete description of patterning of all modalities of human communication has not yet been achieved. Hall described the general theory:

Culture is communication and communication is culture.

Culture is concerned more with messages than it is with networks and control systems. The message has three components: sets, isolates, and patterns. Sets are perceived and constitute the point of entry into any cultural study. They are limited in number only by the patterned combination of isolates that go to make them up. Isolates are abstracted from sets by a process of comparing sets on the level of differential meaning. Controlled experiments are set up and the subject is asked if he differentiates between event A and events B,C,D,X,Y, and so on, until all the distinctions he makes have been isolated. Isolates are limited in number. Patterns emerge and are understood as a result of the mastery of sets and isolates in a meaningful context. Patterns are also limited in number.
(Hall 1959, 169-170)

One result of these developments was a conference on communication at Indiana University at which Margaret Mead labeled the field of semiotics:

We have been challenged by Dr. Goffman to say what we are doing and we are, I think, conceivably working in a field which in time will include the study of all patterned communication in modalities, of which linguistics is the most technically advanced.
(Mead 1964)

Another result of these developments was the study called "The Natural History of an Interview", which will be described in the following two chapters.

I have described several approaches to communication research conducted within the "social" paradigm: the Dramatistic, symbolic interactionist, behavioral program, ethnomethodological, human ethological, and linguistic approaches. Within the linguistic approach, sociolinguistics, structuralism, semiotics, and descriptive linguistics were mentioned as specializations. The theories and methodologies vary greatly for these approaches. They share, however, a set of assumptions about human social communication which distinguish them from "psychological" approaches.

4. The "social" paradigm in communication research: basic assumptions.

- A. The first assumption is that social communication systems cannot be reduced to individuals or their interactions.

This is the main premise of any social science study -- that social phenomena can be described, analyzed, and explained in their own terms rather than as resulting from the addition of individual behaviors. Stated positively, this assumption identifies the black box or basic unit of communication systems as the nonrandom, rule-governed behavioral system of a group of socially related organisms.

We are not, in social psychology, building up the behavior of the social group in terms of the behavior of the separate individuals composing it; rather, we are starting out with a given social whole of complex group activity, into which we analyze (as elements) the behavior of each of the separate individuals composing it. We attempt, that is, to explain the conduct of the individual in terms of the organized conduct of the social group, rather than to account for the organized conduct of the social group in terms of the conduct of the separate individuals composing it. For social psychology, the whole (society) is prior to the part (the individual); not the part of the whole; and the part is explained in terms of the whole, not the whole in terms of the parts. The social act is not explained by building it up out of stimulus plus response; it must be taken as a dynamic whole -- as something going on -- no part of which can be considered or understood by itself -- a complex organic process implied by each individual stimulus and response involved in it.
(G H Mead 1934, 7)

While some researchers assume homogeneity of the group under study, and describe a language as if every member of that speech community spoke in the same way, Hymes and other researchers emphasize heterogeneity within the group. A complete description of a speech community would then consist of the various codes in use (different languages, dialects, jargons, etc.), and the rules for usage of the different codes for different people, at different times, and in different situations:

A minimal definition of a speech community refers to the sharing not only of at least one variety of a language, but also of norms for its use...In general, the means of speech of a community are understood, not as a single language described by a formal grammar, but as a repertoire of ways of speaking (speech styles), to be described by an ethnography of speaking.
(Hymes 1974, 45)

Within any speech community, various sorts of codes coexist. In our own culture, special speech forms are reserved for baby talk, for talking to animals, for addressing the very old, for lovers, for those who are intimate, for those who are socially distant, and for those in superior and authoritative or inferior positions. Ethnic, racial, economic, occupational, religious, and sexual factors influence the use of codes. In addition, members of a speech community are not interchangeable, identical modular parts. Children, for example, are assumed to control the prevailing language to only a limited extent; upper-class WASPS are not expected to be able to use lower-class black dialects proficiently; and garage mechanics are generally not expected to have the lexicon or grammar of a university professor. There are variations in speakers as well as in codes. A further complicating factor is that speakers often control more than one code: from multilingual children of immigrant parents to college students who lapse into slang when their formal papers are completed.

The social patterning of verbal and nonverbal communication for any group cannot be represented by a single grammar and dictionary of sounds or movements. A complete description has to take into account the multiplicity of social relations revealed by multiplicities of ways of speaking. There will be complex levels of patterning, and specialization of function -- a communicational division of labor. Thus the assumption of social-communicational phenomena which cannot be reduced to individuals or their behaviors leads to the description of patterned, systemic, multi-level complexities.

This first assumption of the social approach also allows for explanations of the existence of from 4000 to 8000 different languages, according to various estimates, in the world. Were language simply a

vehicle for the expression of ideas, the languages of the world would be essentially calques of one language, substituting different vocabulary but maintaining the same logical structure. Translation would consist of simply changing the word for "dog" in one language to the corresponding word in a second language.

Yet grammatical and semantic relations vary as much as lexicons. Translation of the Bible, for example, takes not a few hours of word-substitution but years, often ten or twenty years, of study of the structure and function of the foreign language. Languages carry deep assumptions about the nature of society, humans, and the universe which form a context within which their vocabulary is meaningful and which reflect, and interact with, cultural beliefs. Spoken language is like the tip of the communicational iceberg, with implicit assumptions and tacit knowledge to sink any eager translator's ship.

If linguistic and other kinds of communication are seen as inherently social, as the means by which human intra- and inter-group relations are sustained, created, and understood, then the myth of the Tower of Babel and God's punishment of the human species by shattering its common language into thousands of different languages loses its power. Just as millions of species of flora and fauna cover the earth, each biologically and behaviorally adapted to its environmental niche and contributing in turn to the evolution of the environment, so human social groupings flourish as thousands of different variations, adapted to their social as well as their physical environments. This communicational relativity should be no more or less surprising than the specialization of biological species. In the case of humans and many other mammals, the behavioral systems

serve functions that colors, smells, and bodily modifications serve in other classes of organisms. Human groups as open systems remain viable through their cultural, social, and communicational patterns.

This first assumption has other implications. When the "psychological" researchers assume the individual as basic unit, they locate his ideas, emotions, and personality "inside" him, as properties of the individual. "Social" researchers, by assuming that communicational phenomena can be described and explained on the group level, may make the corollary assumption that emotions, ideas, and personality types are socially patterned. Just as a person's speech reflects his social membership, so his behavior may reflect his position within the group and may be learned rather than innate, culturally variable rather than universal. What is the possession of the individual in one view is the property of the group in the other.

This view ends the dichotomies by which man was split from nature, mind from body, and self from other. Rather than assuming the human species to be unique and separate from all other species, the "social" view allows the possibility of seeing human and other animals as different in degree and not kind. Rather than assume an empty distance between individuals, groups, or humans and the rest of the world, "social" researchers may conceive of a boundary like a semi-permeable membrane around not the individual but the social group, a boundary consisting of differences in behavior from other social groups, a boundary inside of which group members already are in communication from conception to death without having to achieve or create communication.

- B. The second assumption is that communication is multimodal rather than verbal, employing sight, sound, taste, smell, heat, pressure, and other senses.

In moving from a verbal to a multimodal conception of human social communication, researchers learn to view the entire human body as articulatory. Linguists limit themselves to describing the behavior of the so-called "organs of speech" in the vocal tract, but the body as a whole is trained, in different ways by different groups, to perform communicatively significant motions. This wealth of motion, from the blink to walking, from a quick truncated nod to the dance, is extremely difficult to describe. Descriptive systems for thermal, olfactory, gustatory, and streptic communication are still primitive. Yet the information serves communicative functions.

The recent explosion of a "nonverbal communication" literature, especially in the past ten years, reflects a growing awareness of these other modes of communication. Much of the literature describes nonverbal communication as accompanying or modifying or contradicting the verbal communication as if words relayed ideas and nonverbal communication, on another track, commented on the words. In this sense nonverbal communication has been called metacommunicational -- as in the sarcastic smile that belies the content of the utterance, the defensive arms-crossed posture that contradicts a spoken invitation, or the grin that amplifies a statement of joy. Words are often given primary importance, with nonverbal communication as a secondary factor.

The assumption that communication is multimodal, however, does not imply that any one mode is more important than any other.

Rather than assuming that words carry ideas and nonverbal communication carries emotional commentary, or that words are the essence of communication because they can be preserved for all time in writing, or that the only really important part of an encounter is the content of the conversation, "social" researchers may assume that some information flows through all modes and that the perceptual filtering and social patterning of this information can be described. Different groups, in this view, may have different sensory codes, just as different language groups divide the continua of vowel sounds into phonemes. Thus for one group, smell may be considered extremely important, and a rich vocabulary and set of rituals focussed on smell may be developed, while another group glories in visual sensations. The researcher cannot assume that a group which elaborates verbal communication and seems to neglect nonverbal communication enjoys more efficient or effective communication; he can only attempt to describe the kinds of information and the sorts of channels utilized by that group. He may be unable to describe the complex interplay of senses: kinesic behavior and speech; proxemic variations and olfactory messages; or intimate face-to-face encounters employing all senses simultaneously. It is in fact a rare rather than a typical situation when only a few senses are involved -- as in telephone communication or reading. In daily life encounters involve the body as a whole.

Another implication of this second assumption is that communication is continuous. Verbal communication can be said to start and stop with the beginning and ending of an utterance or interchange, but multimodal communication continues through verbal silence and starts with conception, ending with death. Communication, in this

view, cannot be turned on and off at will and cannot be measured in terms of accuracy or speed. There is no point at which an individual is unable to communicate due to intense emotion. It becomes impossible to evaluate the quality of relationships by measuring the amount of communication used, when communication is seen as continuous rather than episodic transmission of messages. Finally, the "psychological" view of communication as the crossing of distances is replaced in the "social" view of multimodal communication with a conception of a continuum from near to far along which members of the social group are more or less interrelated.

The assumption of multimodal rather than of verbal communication leads to a different understanding of "meaning". Rather than define meaning as the idea or object which is the reference for a word, it is possible to define meaning as a pattern function. If not just words but all emic behavioral units are meaningful, in this larger sense, then the meaning of an encounter cannot be described by dictionary definitions of the words used but requires incorporation of information available to all the senses:

Meaning has its locus not in the individual bits and pieces of the total structure, but within the language structure as a whole. None of the bits and pieces has meaning of and by itself. Meaning occurs only as a function of a total behavioral event in a social matrix.
(Pike 1967, 609)

- C. The third assumption is that communication is not necessarily conscious or intentional;
varying degrees of conscious attention and levels of intentionality are involved.

Gregory Bateson pointed out that even when an individual intends to convey the simple message, "The cat is on the mat", he becomes entangled in implicit messages. On one level, the utterance provides factual information about a particular mammal's location in space. But in addition, the sentence presupposes a universe of discourse in which such a statement is meaningful:

One category includes the implicit communication between A and B that the word 'cat' shall stand for a particular, furry, four-footed thing or for a category of furry, four-footed things.

(Bateson, in von Foerster 1953, 1)

It is also assumed that English is the mutually comprehensible language within which such a sentence is meaningful to both A and B.

Another kind of implicit message implied by the statement, "The cat is on the mat", is one of social relationships:

There is another set of implicit contents of such a message as: 'The cat is on the mat', namely, implicit statements about relationship. We are trying to tell each other that we love each other, that we hate each other, that we are in communication, that we are not in communication, and so on. The implicit messages about the conventions of communication are messages about the 'how' of communication, but these (about relationship) are messages about the fact of communication. 'We are communicating' is a statement by two persons.
 (Bateson in von Foerster 1953, 2)

Every choice of words connotes a proposed relationship, of peers or inequals, of attraction or repulsion, and of joy or sorrow, for

example. Neutrality can be achieved, if at all, only by attempts to expose and remove all these levels of implicit messages -- as when a computer prints out on paper or CRT such a statement as "The cat is on the mat" devoid of context. Yet even here, a universe of discourse, a language, a social context, and a relationship is implied. Secret agents and pathological liars find it far more expedient to manipulate the implicit messages so that the statement will be accepted without question as utterly familiar and predictable. They rely on the fact that implicit messages, while rarely held in conscious awareness, supply the context within which a statement will be comprehended.

Bateson's example illustrates the more general principle that members of each social group learn to perceive selectively. This means more than the tendency of eye-witnesses to an accident to offer conflicting reports. The implication of this patterned selective perception is that information which reaches the body in quantities of thousands of bits per second in all sensory modalities, added to information of phenomena within the body, is integrated over and over again until what we hold in conscious focus represents an infinitesimal fraction of what we might potentially know. Reichian therapy, biofeedback, yoga, and zen are some means to vary and increase the kinds of information available to conscious awareness. Years of such discipline probably increase the fraction by a small percentage at best. Bateson has stated that consciousness may be more of a handicap, a mis- or maladaptation, than a blessing, because conscious judgments must be made on the basis of such a poor sampling.

If members of each social group learn to disattend certain kinds of communication, they cannot be thought to intend communication in those modalities. A woman who blushes, produces odors, moves her body seductively, listens with wide-eyed appreciation, and laughs hysterically on purpose is not to be trusted, we feel, because she manipulates the very signs we depend upon for truthful reports of her mood. The man who controls his use of space, clothes, gestures, facial expressions, and posture perfectly is also suspect. Often it is the habitual, small, trivial behaviors by which we know a person when he himself may be unaware of his tics and fiddlings. We find it disconcerting when behaviors which our social group has assigned to the realm of nature turn out to have been intended and produced quite carefully. We think it not fair to hold a person responsible for behaviors which he obviously cannot control.

D. The fourth assumption is that communication is inherently neither good nor bad, successful nor failed; it is simply an object of study about which different groups form different evaluational criteria, which are also objects of study.

Communication, in the "psychological" view, was seen as the transmission of a verbal message from sender to receiver. Success consisted of noise-free transmission and accurate reception of the message as sent. In the "social" view, however, since communication is seen as continuous, multi-modal, and a group-level process, these criteria of success or failure cannot apply. The group which maintains itself over time and adapts well to its physical, biological, and social environment has successfully developed a system of social

and communicational relationships. No single message-transmission within such a system can be labeled a success or failure, however, since each message is interrelated to all other messages in the pattern.

Standards for evaluating communicational messages provide further data for the researcher. Each social group has its own notions of beauty, elegance, simplicity, effectiveness, and appropriateness for the various modalities. In our own culture, a large literature of prose and poetry, film, music, dance, and theatre criticism has been developed, while relatively less has been written about tastes of food, dress, architecture, or perfumes. In other groups, elaborate treatises on the dance and costumes may outweigh literary criticism. These written and spoken judgments of communication cannot be imposed by the researcher on the assumption that his own culture has the highest standards.

These four assumptions are systemically interrelated. The first assumption, that social phenomena can be studied on their own level without reduction to individuals, implies that social communicational behaviors are patterned on the group level. The second assumption, that communication is multimodal, leads to a view of communication as continuous, employing a variety of senses with some division of labor in the group, and complex. Units of communicational behavior at the different levels of the hierarchy are different for each social group and serve different functions. Meaning, in this view, is a pattern function, a result of complicated cross-references of units on one level and in one modality with units on another level and in another modality. The third assumption follows: if communication is multimodal, and if group members have selective perception, then no individual can be conscious of all his communicational

activity. He cannot then be held responsible for intending behaviors of which he is not aware. Finally, once communication is assumed to be complex and systemic rather than consisting of the simple transmission of a message from one individual to another, the traditional standards of evaluation such as accuracy no longer apply. Group standards for communications in various modalities become additional sources of data for the researcher.

- E. The fifth assumption is that communication involves social groups rather than a dyad of sender and receiver, and multilayered exchanges rather than sequences of transmissions.

Researchers in the "psychological" view often posit a sequence: A speaks while B listens, B speaks while A listens, and so on. Conversations of more than one are described in terms of dyads: in group ABC, A speaks, B and C listen; B speaks, A and C listen; and so on. Discussions of conversations in which A played one role, B another, C another, and the three participants wove their utterances together like threads in a tapestry are rarely offered -- partly because it is difficult to do so without resort to poetic imagery. Researchers in the "social" view, however, may hypothesize that dyadic encounters are less frequent than and not as simple as small- and large-group encounters.

Any two communicators employ language, body motion, spatial orientation, and other patterns which are not their private creation but the heritage of a group, one which may be thousands of years old. Topics of conversation, people talked about, and the structure of the conversation itself are properties of the group, not the couple.

The dyadic view also implies an action-reaction sequence, as if A's utterance triggered B to respond in a certain way. In the "social" view, researchers may say that A and B -- and other conversationalists in that social group -- are both constrained by rules for speaking, and both act out parts in a larger social drama. Rather than a Newtonian conception of one object having an effect on another object, the "social" researcher may posit a universe in which senders, messages, and receivers are not reified things but components of behavioral systems. This is a view that Whitehead showed is focussed on energy rather than matter:

Matter has been identified with energy, and energy is sheer activity; the passive substratum composed of self-identical enduring bits of matter has been abandoned, so far as concerns any fundamental description...The modern point of view is expressed in terms of energy, activity, and the vibratory differentiations of space-time. Any local agitation shakes the whole universe.
(Whitehead 1968, 12)

In moving from a world of things to a world of patterns of behavior, "social" researchers allow for multiples of sources, destinations, and messages which are not simple extrapolations from transmission from one member of a dyad to another but involve different kinds of communication roles and productions which are systemically interrelated in describable patterns.

This fifth assumption is implied by the other four. In all five assumptions, systems rather than isolated units, multiplicity rather than single media or communicators, and graded continua rather than dichotomous oppositions are assumed. The focus is shifted from the establishment of a relationship between two individuals to the maintenance of a social system and patterns of behavior.

F. The sixth assumption is that the researcher is a participant-observer of communication systems.

The fabled Martian anthropologist would be unable to make sense of the behaviors he observes if he had not already learned a language, lived as a member of a social group, and taken on the ways of living of a culture. This learning, much of it accomplished in childhood for humans, results in selective perceptions, inability to pay conscious attention to certain kinds of behaviors without extensive training, standards of beauty and excellence, constraints on empathy, recognition of particular emotional expressions and unfamiliarity with others. The very ability to share in a behavioral and cultural system may work to prevent sharing in another.

"Social" researchers, therefore, cannot simply observe communicational systems. The best research involves training in self-awareness so that the constraints imposed by the native culture can be first recognized and second countered. The third step is to take on, for a time, a new way of speaking, moving, and even thinking so that the researcher can describe the patterns of another system. Anthropological fieldwork requires months and even years because the entire body is engaged in this re-programming. Non-anthropological "social" researchers may attain something of the same effect by making extended observations of the same behaviors before conducting studies, as when a researcher watches a film of some interaction fifty times before attempting analysis. This "soaking" process engages emotional and relatively unconscious processes, trains ears and eyes to perceive with new clarity, and allows the brain to form Gestalts by integrating the audiovisual information during repeated viewings.

Given the fact that linguistic and other communicational phenomena are organized into "emic" units by each social group, "social" research involves not only the relatively objective description of a detached observer but also the participant-observer's "inside" view of behaviors from the subjects' point of view. The very regularity of the behaviors allows this penetration: native speakers persistently and repeatedly respond to one vowel sound as if it belonged to one phoneme, and to another, even phonetically similar, vowel sound as if it belonged to another, in utterance after utterance and test after test, for example. The researcher can become aware of the perceptual contrasts being made. He does not lose his native contrasts in the process, and can never overcome the years of multisensory training he had as a child, but he can, given time and training, learn to take on an additional point of view.

For a linguist (or a student of any other phase of culture) to be 'objective' means something rather different than for a physical scientist to be 'objective'. A linguist does not obtain usable 'objectivity' in analyzing a given language merely by abandoning his own personal prejudices; in addition, he must acquire those of the native speakers of the language. (Hockett 1955, 211)

I have been speaking as if all "social" researchers worked with members of other groups. In fact, only a minority of those who call themselves communication researchers do. The problems of systematic cultural bias become apparent, however, when the object of study is a foreign cultural or sub-cultural system, and are more difficult to comprehend when the behaviors studied are those

of the researcher's own system. The very familiarity of the object of study makes it even more difficult for the researcher to become aware of his selective perception and unstated assumptions, and when researchers work exclusively with materials from their native culture, the lack of contrast prevents them from realizing that what they see happening could have happened quite differently or not at all. The sixth assumption implies that the researcher who remains unaware of the communication system within which he was raised will project it upon the systems he studies, and that the corrective is training which increases self-awareness and provides contrasting examples.

5. Summary: the "social" paradigm.

This paradigm is characterized by its assumption that communicational phenomena are group-level rather than individual. Definitions of communication within this paradigm emphasize the older meaning of the word: sharing, commonality, participation, and mutuality. The conceptual difficulties surrounding the term "communication" are increased by the need to establish relationships among the concepts "communicational", "social", and "cultural",

Several approaches to communication research within this paradigm were described: Burke's Dramatistic model; the symbolic interactionist theory; the behavioral program approach; ethnomethodology; human ethology; and a range of linguistic approaches, including sociolinguistic, structuralist, semiotic, and descriptive linguistic approaches. The Natural History of an Interview project, described

in the two chapters following, has its roots in the descriptive linguistic approach and takes linguistic methodology as applicable to the description and analysis of human social communication as an integrated verbal and nonverbal communication system.

Research within the "social" paradigm can be characterized in terms of common assumptions rather than shared theories and methodologies. Six such assumptions were listed. These are:

- That social communication systems cannot be reduced to individuals or their interactions.
- That communication is multimodal, rather than verbal, employing sight, sound, taste, smell, heat, pressure, and other senses.
- That communication is not necessarily conscious or intentional; varying degrees of conscious attention and levels of intentionality are involved.
- That communication is inherently neither good nor bad, successful nor failed; it is simply an object of study about which different groups form different evaluational criteria; which are also objects of study.
- That communication involves social groups rather than a dyad of sender and receiver, and multilayered exchanges rather than sequences of transmissions.
- That the researcher is a participant-observer of communication systems.

These assumptions form an intellectual context within which the term "communication" and theories and models of the communication process make sense. Not every researcher in the "social" paradigm will explicitly state or even agree with all of these assumptions; I have described something of an ideal type. Relatively few researchers succeed in moving from the lay conception of communication in this culture, which characterizes the "psychological" paradigm, to the "social" conception. These assumptions also shape the kinds of research designs

used: qualitative and descriptive rather than quantitative and experimental; group-focussed rather than individual-focussed; and multivariate rather than single-variable research. Researchers who believe that science must be conducted in the laboratory according to one particular methodology may find these assumptions "unscientific," and evaluate studies performed by those who make these assumptions negatively. Finally, great confusion can be created when these assumptions are not made explicit in research reports. Delineation of the context of research allows clearer comprehension of the study itself.

In this chapter we have filled in the subdivisions for the "social" approach. Figure IV-5 below gives a summary of the kinds of metacommunication so far described.

METACOMMUNICATION (COMMUNICATION ABOUT COMMUNICATION)

RESEARCH: PSYCHOLOGICAL PARADIGM		RESEARCH: SOCIAL PARADIGM	
<p>APPROACHES: 1.Traditional communication research</p> <p>2.Information theory</p> <p>3.Social psychological</p> <p>4.Communication network</p>		<p>1.Drama-tism</p> <p>2.Symbolic interaction</p> <p>3.Behavioral program</p> <p>4.Ethnology methodology</p> <p>5.Ethology</p> <p>6.Linguistics</p>	
<p>ASSUMPTIONS</p> <p>1.That human individuals are real, independent entities bounded by the opaque covering of skin.</p> <p>2.That communication is the transmission of a sequence of words from one individual to another.</p> <p>3.That communication is an intentional and conscious process.</p> <p>4.That communication can succeed or fail, can be judged good or bad.</p> <p>5.That communication occurs in a linear sequence -- from sender to receiver -- involving a dyad.</p> <p>6.That the communication researcher is outside the system he observes.</p>		<p>1.That social communication systems cannot be reduced to individuals or their interactions.</p> <p>2.That communication is multimodal.</p> <p>3.That communication involves varying degrees of attention and levels of intentionality.</p> <p>4.That communication is inherently neither good nor bad, successful nor failed.</p> <p>5.That communication involves social groups rather than a dyad of sender and receiver, and multilayered exchanges rather than sequences of transmissions.</p> <p>6.That the communication researcher is a participant-observer.</p>	

FIGURE IV-5: DIAGRAM OF METACOMMUNICATION AND COMMUNICATION RESEARCH

Note to the reader: Please do not think that the author has invented any of the assumptions of the "Social" approach presented in this chapter, nor their sisters in the "Psychological" chapter. I have rather synthesized a pattern of ideas I found in the literature. See the works by Birdwhistell and Scheflen listed in the following bibliography for clear examples of the "Social" assumptions. See the works by Thayer listed in the bibliography for Chapter Three for interesting critiques of (and thus descriptions of) the assumptions of the "Psychological" approach.

I attempted to satisfy my own need to clarify the differences between the two approaches so that I could make sense of the various definitions, theories, models, and research techniques involved in communication research.

What ought to be performed is a description and analysis of the intellectual history of the field in depth. Dr. Birdwhistell frequently points out today's communication researchers build on the work of their predecessors -- often unaware of the richness of that heritage. Problems of the differences in social patterning of speech and body motion have interested humans for centuries. Perhaps an oscillation between individualistic and collectivistic modes of thought has had an influence on our thinking about persons and societies. This study as presented is extremely limited, and a further study tracing the assumptions listed here back for even one century would be useful.

CHAPTER FOUR

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CHAPTER FIVE

THE NATURAL HISTORY APPROACH TO COMMUNICATION:
THEORY

This chapter and the one following are based on the study called The Natural History of an Interview (McQuown et al 1971). This study was conducted by a team composed of psychiatrists, linguists, anthropologists, an anthropologist interested in kinesics, and various colleagues at a time of unusual cross-fertilization of ideas from many fields through interdisciplinary conferences and resulting from teams developed during the Second World War. While I am including the NHI in the linguistic, specifically the descriptive linguistic, approach to "social" communication research, I must emphasize the extent to which researchers, theories, methodologies, and intellectual contexts from a wide range of disciplines were involved.

I have chosen to discuss the "Natural History" approach to communication research in such detail for several reasons. First, it is in many respects the most comprehensive study of human social communication as multimodal, multilevel, continuous, systemic, and transactional extant. Secondly, great theoretical and methodological contributions were developed during the years in which the study was conducted and often in order to answer questions posed by the material. Thirdly, the researchers took pains to make both their theoretical assumptions and methodological approaches explicit, and to relate the two, which is rare in the communication research literature. Fourthly, the NHI has been very influential over the past twenty years: the develop-

ment of kinesics led to a nearly cancerous growth of the nonverbal communication literature; the creation of paralinguistic descriptive categories led to a second literature and a new awareness that the words stripped of what laymen call "tone of voice" lose much of their meaning; the use of linguistic, paralinguistic, and kinesic analysis on interview materials (often psychiatric interviews in related studies) led to a growing interest on the part of therapists and counselors in the behaviors of all participants in the interview rather than simply the intrapsychic processes of the client; and in studies and conference reports dealing with human communication, nonverbal communication, research on face-to-face interaction, and semiotics of communication, the NHI is often cited as an important source and resource. Yet, the fifth reason is the relative difficulty in obtaining both the materials and the necessary training to do such a study as the NHI. The written materials are available from the University of Chicago Joseph Regenstein Library's Microfilm Collection, and film prints and audio tape copies can, upon request, be obtained from Dr. Norman McQuown at the University of Chicago and from a few of the original research team members. But in this period of the late 1970's, it is difficult to find a training center and very nearly impossible to find a center with sufficient film, tape, and written materials, equipment such as analysis projectors, and experienced linguistic and kinesic researchers. This report is being offered in the hope that such centers will be established eventually.

I shall discuss the "natural history" approach in general, the NHI, the assumptions made by the NHI, and the descriptive linguistic theory involved.

1. The place of the "natural history" approach in scientific inquiry into communication.

The "natural history" approach involves two concepts: "natural" and "history". "Natural" refers to the descriptive rather than prescriptive study of phenomena in their usual surround instead of the laboratory. In biology, for example, the "naturalist" uses field observations to establish structure and functions for behavioral systems.

"History" refers to a diachronic perspective through which phenomena are described as they change over time. In addition, "history" implies a concern for the development of a particular individual or group rather than for all humans and universal laws. "Historical" studies often show a concern for patterns, and relate biographical, economic, social, cultural, and psychological factors as components of a picture of a group.

The "natural history" approach has been opposed to the scientific approach. The one is said to focus on individuals, contexts, and development; the other is said to emphasize whole categories, general truths, and timeless laws. Toulmin pointed out that a "natural historian" is bound to the level of facts and everyday language, while scientists such as physicists can develop abstractions and special terms:

Natural historians, then, look for regularities of given forms; but physicists seek the form of given regularities. In natural history, accordingly, the sheer accumulation of observations can have a value which in physics it could never have. (Toulmin 1960, 53)

While the "natural historian" is said to simply accept the phenomena he observes, the scientist is said to look beyond these to form a set of ideas which both characterize reality and explain it. It is with reference to this model of the universe that particular phenomena appear strange and in need of explanation. If the "natural historian" meets Nature with a blank slate, then the scientist starts with approximations to a model within which his observations function as clues:

He begins with the conviction that things are not just happening (not even just-happening-regularly) but rather that some fixed set of laws of patterns or mechanisms accounts for Nature's following the course it does, and that his understanding of these should guide his expectations. Furthermore, he has the beginnings of an idea what these laws and mechanisms are, so he does not (and should not) approach Nature devoid of all prejudices and prior beliefs. Rather, he is looking for evidence which will show him how to trim and shape his ideas further, so that they will more adequately fit the Nature with which he wrestles. (Toulmin 1961, 45)

If scientific inquiry is a search for explanations, then the mere gathering of observations is pre-scientific. As the inquiry, and the discipline, mature, research will move from description of context-bound phenomena to theories, predictions, experiments, models, and explanations. In this view, the natural history approach is merely a necessary evil reflecting ignorance rather than a truly scientific activity. Perhaps such a view accounts for the wealth of models and theories of communication and the lack of basic, careful research.

Toulmin's description of the "natural historian" is inaccurate, however. We have noted above that the communication researcher can never have the distance from his object of study that astronomers have because he deals with phenomena which are of the same scale and nature as he. In addition, every communication researcher starts out with cultural beliefs, at least one language, and assumptions about communication which are often unconscious filters. His very perceptual system provides limited information and shapes the observations with such great influence that "objectivity" is impossible to attain:

On the conscious level of cognition, we never start out from the immeasurably lower level of unselected and unprocessed sensory data, but rather from the sophisticated reports made to us by our perception, particularly our Gestalt perception. These reports do in fact already contain hypotheses, and quite well-founded ones at that. Of myself, for one, it is simply not true that my first step in approaching any phenomenon I have observed consists in creating a rather random hypothesis and trying to find fault with it. Knowing about the functions of my perception as I do, I feel inclined to suspect that the sequence of events is, at least partly, the reverse of this. I strongly suspect that, at the time when a set of phenomena seriously begins to fascinate me, my Gestalt perception has already achieved its crucial function and 'suspected' an interesting lawfulness in that particular branch of sensory data. If I then spend more and more time in observation of these particular phenomena, it is already a consequence of a hypothesis which my perception has formed though I may still be quite unconscious of it. The increased observation accelerates the input of sensory data until, when sufficient redundancy is achieved, the consciously perceived lawfulness detaches itself from the background of accidentals, an event which is accompanied by a very characteristic expression of relief expressed, as Karl Bühler described many years ago, in the sigh: 'Aha'.

After this 'Aha-experience' I proceed to cast about for further observation in which the suspected lawfulness plays a role...I must never, of course, forget that there really is no such thing as verification, and that I can only increase the probability of being right by collecting more and more cases in which my hypothesis was not falsified, and by assiduously searching for circumstances under which there is maximum probability that any other than my chosen hypothesis could furnish a satisfactory explanation.
(Lorenz 1971, xxii)

It is necessary, for this reason, for human social communication researchers to undergo training which makes them aware of their selective and Gestalt perception processes. The result is a reflexive research that teaches the inquirer not only something about the group he studies but also a great deal about himself and his limitations. A second implication is that the assumptions must be explicitly stated and methodology clearly explained to prevent solipsism; in this case not the laws but the means by which knowledge can be obtained must be held in common. Observations are scientific, in this view, if other researchers with the same training would produce the same characterizations and if the criteria for judgment are clear enough to allow for the resolution of differences.

The natural history approach is just as scientific as that of physical theorists; the difference is that complex patterns rather than single variables are studied. While chemists can trace effects of a single cause, behavioral scientists are faced with organized complexity and multiple causation:

We find that it is impossible to pursue one single chain of causality, as physics and chemistry can legitimately do, because, in an organism, everything is causally interacting with everything else...In other words, it is a law that you can understand

the subsystems of a system
simultaneously or not at all.
(Lorenz 1971, 11)

The "natural history" approach to communication research implies a contextualist view of scientific inquiry.

2. The Natural History of an Interview: context of the study.

This study is an outgrowth and extension of the American descriptive linguistic tradition. In this tradition, language is analyzed as a means of social communication rather than as a means of expression of one individual's ideas to another. Bloomfield formulated the most extreme "anti-mentalistic" position:

We must study people's habits of language --
the way people talk -- without bothering
about the mental processes that we may
conceive to underlie or accompany these habits.
(Bloomfield 1970, 92)

and the descriptive linguistic position was criticized as totally unconcerned with meaning for this reason. In fact, a more complex conception of meaning was offered: rather than the simple association of a word with a concept, meaning implied a pattern of selections of units on different levels of the linguistic hierarchy which limited possible interpretations of utterances. Bloomfield was reacting against the linguistics of the previous century, which consisted of philological studies of words and their meanings:

Nineteenth-century linguistics, or philology, as it was often known in this country, inherited a body of doctrine stemming from Aristotle and the Stoics, ancient lexicographers and rhetoricians, and their successors during the Middle Ages and Renaissance...Two things stand out: theories of meaning and of semantic analysis were based on the assumed identification and linguistic priority of the word as a self-evident recognizable unit in language, and the languages within and around which study was concentrated were by and large the well-known literate languages, ancient and modern, of European and Mediterranean civilization.
(R H Robins 1971, 34)

These philological studies had placed linguistics within philosophy and the humanities. Bloomfield and other American descriptive linguists hoped to develop linguistics as a social science, and in reaction to the earlier preoccupation with words as signs for ideas declared themselves less interested in conceptual meanings of utterances than in the behaviors accompanying them and the actual behaviors of speech. In addition, they were faced with the prospect of recording and analyzing the fast-disappearing languages of the American Indians, whose structures bore little or no resemblance to Greek and Latin grammar. A "word" in such languages might be equivalent to an entire complex sentence in English, as Whorf's example in Figure V-1 below shows:

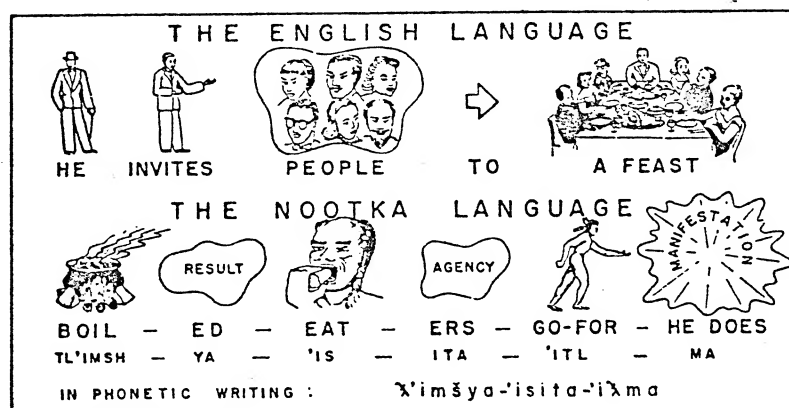


FIGURE V-1: ENGLISH AND NOOTKA (From Whorf 1967, 243)

The descriptive linguists had to create methods and theories which would allow them to analyze such languages in their own terms. They had to start from "scratch" -- with utterances and texts recorded first phonetically, then phonemically. They found that the grammatical structures were, if anything, even more complex than Greek and Latin, and could not make the popular assumption that such languages were more "primitive" if they "lacked" forms which appeared in the classical European languages. Boas, for example, proclaimed that the assumption that American Indian languages and thus their cultures were "primitive" had to be dropped:

It does not seem likely, therefore, that there is any direct relation between the culture of a tribe and the language they speak, except insofar as the form of the language will be moulded by the state of the culture, but not insofar as a certain state of culture is conditioned by morphological traits of a language.
(Boas 1964, 19)

He, and the generation of anthropologists and descriptive linguists he influenced, rejected the view of Social Darwinism that Indians and other "primitives" spoke a language closer to the original language which all men spoke before Babel, and assumed instead that every language and every culture is complex, civilized, and elaborate when studied in its own terms without preconceptions.

Edward Sapir, another American linguist, contributed the insight that the phenomena of "tone of voice", "emphasis", and "voice quality", among others, were more than mere rhetorical devices characteristic of the individual speaker. These variations, plus visual gestures, could be described as socially patterned:

There is always something about the voice that must be ascribed to the social background, precisely as in the case of gesture. Gestures are not the simple, individual things they appear to be. They are largely peculiar to this or that society.
(Sapir in Mandelbaum 1949, 535)

In his description of "Speech as a personality trait", Sapir emphasized that listeners could not understand the modulations of the voice without assuming a range of variation common to members of the social group:

You cannot draw up any absolute psychological scale for voice, intonation, rhythm, speed, or pronunciation of vowels and consonants without in every case ascertaining the social background of speech habit. It is always the variation that matters, never the objective behavior as such.
(Sapir in Mandelbaum 1949, 542)

The NHI team incorporated both the theoretical standpoint and methodology of descriptive linguistics and the insight of Sapir that "extra-linguistic" phenomena are also patterned and describable. George Trager, one of the linguists associated with the project, outlined this wider view of descriptive linguistics in his pioneer article: "Paralanguage: a first approximation":

For many years linguists and other students of language and of communication of a whole have been aware that communication is more than language. They have known that all the noises and movements entering into the activity of people talking to each other and exchanging communications needed to be taken into account if a total picture of the activity was to be arrived at. At the same time it was known, by a sort of tacit consent, that much of what went on was not accessible to study by such scientific methods as had yet been devised. Accordingly, such linguists limited themselves to examination of such parts of linguistic structures as they could define and

examine objectively, and other communication systems than language proper remain undefined. (Trager 1958, 1)

The NHI team proposed to examine those other systems of behavior in addition and relation to speech.

The project started with the quest of a woman, Dr. Frieda Fromm-Reichmann, a psychiatrist, to gain empirical evidence of the cues she utilized in diagnosis and treatment in order to train residents. She proposed that members of a seminar at the Center for Advanced Study in the Behavioral Sciences at Palo Alto on the relationships of language behavior to other behavioral systems investigate psychiatric interview materials. Dr. Norman McQuown and others prepared a transcription (with phonetic, phonemic, morphemic, vocal qualifier, and regular orthography notations) of such an interview (McQuown 1957). He pointed out significant linguistic behaviors which might be useful in psychiatric diagnosis; these behaviors were deviations from the "baselines" or "profiles" of interviewer and client and significant because they were relatively unpredictable breaks in the speech pattern of each person. As a linguist, he could show such cues, but he could not interpret them as indices of psychological processes:

The linguist can be primarily responsible only for the vocal form in its vocal context -- he must necessarily subordinate himself to and collaborate with the content analyst (who works with all the nonvocal contexts) in deriving content labels for his formal vocal items. (McQuown 1957, 86)

This division of labor, between those who were responsible for the description of form and those responsible for the interpretation of content, was carried into the NHI work later.

A second result of the psychiatric interview transcription and analysis was McQuown's formulation of the criteria of total accountability, replicability, and verifiability which ensured that the inquiry would be scientific and would reveal new information:

First, total accountability -- everything on the tape must be categorized analytically and adequately rendered by the symbology.
 Second, replicability -- six investigators can listen to the same tape, and, within the limits of human error, apply the same analytic categories (and their corresponding symbology) and come out with the same transcription (save for minor differences made inevitable by the elasticity of the analytic systems).
 Third, verifiability -- where there are differences in the transcription, all six investigators can refer to a particular symbol representing a particular sound-configuration on the tape and can, rechecking the tape at that particular point, iron out their differences.
 (McQuown 1957, 80)

This study was conducted in December 1955 and January 1956. Realizing that a great deal of information in interviews was visual rather than audible, McQuown asked that Dr. Ray Birdwhistell, who had published his Introduction to Kinesics (1952), be asked to work with the team. Birdwhistell arrived in February 1957. Drs. Fromm-Reichmann, McQuown, Charles Hockett, Henry Brosin, and Birdwhistell asked Gregory Bateson, who was also in Palo Alto, to show them some of his family interaction films. These were sound films made in the homes of families with different kinds of communication patterns which were intended to record natural interactions of parents and children and siblings, so that the communicational origins of schizophrenia might be described.

The six-person team, consisting of linguists (McQuown and Hockett), psychiatrists (Fromm-Reichmann and Brosin), and anthropologists (Bateson and Birdwhistell), selected films of a particular family for intensive analysis. The mother of this family had agreed to filming for the following reasons: she had attended at least one of Bateson's lectures and seen his film "Communication and Interaction in Three Families," she was married to a man who had great interest in communicational engineering problems, and she was in therapy at the time. She had been contacted through her therapist and planned to use the resulting films as an aid in her treatment.

One film, dubbed the "Doris film," was chosen for the primary research material. It consisted of an informal interview of the woman in her own living room by Bateson late one weekday afternoon. A continuous audio tape record was made of events from setting-up through the dinner following the interview. The film portion, however, consisted of one-hundred foot rolls with gaps representing times of reloading the camera or of Bateson's decision to stop filming. The "Doris film" consists primarily of Gregory and "Doris," with occasional zooms to a closeup of "Doris," plus a final brief segments showing her husband "Larry" conversing with Gregory while "Doris" prepares dinner. The son, "Billy," moves from the couch area in which the interview is being conducted to his corner of the living room where his "fortress" is located, and to other rooms and outdoor areas. Other films showing the family at dinner, the husband bathing the son, a small party, and the mother with her therapist were used as supplementary material.

All six members of the team worked with this material from June through August 1956. Several additional meetings were held at different locations with various permutations of the team members:

six at the University of Buffalo, and five in Pittsburgh. Drs. Henry L. Smith and George Trager, both linguists, became involved in the Buffalo meetings, and Dr. Erik Erikson consulted on the psychiatric interpretations at other meetings. Mr. Bateson moved on to research on dolphin communication systems. Three small research-and-training institutions were established in Philadelphia, Pittsburgh, and Chicago. Dr. Birdwhistell at Eastern Pennsylvania Psychiatric Institute in Philadelphia involved Drs. Albert Scheflen, Richard Harris, and others in his continuing study of body motion communication and social communication. Dr. Brosin at Western Pennsylvania Psychiatric Institute in Pittsburgh directed a team including Drs. Felix Loeb, Jr., William Charney, and William Condon, on the analysis of speech and body motion communication in relation to psychological processes. Dr. Condon still conducts research in spoken and moved synchrony, using micro-analytic techniques, at the Boston University School of Medicine. Dr. McQuown, in the University of Chicago Department of Anthropology, involved such researchers as Drs. William Austin, Raven McDavid, Jr., William Offenkrantz, and Starkey Duncan in ongoing linguistic and paralinguistic research using materials from English-, Spanish-, and Maya-speaking communities. Dr. McQuown also offered a course, "Interview Analysis", using the written, film, and audio tape materials of the NHI project as primary text material.

Materials were collected and edited for publication by 1968, but the cost of printing the extensive transcription materials proved prohibitive. Dr. McQuown made the complete report available through the University of Chicago Joseph Regenstein Library microfilm collection, and established a small library of audio tapes and film prints for students and researchers to use. Ideally, a researcher could use the written materials as a training manual and, working with the film and

tape materials, teach himself the transcription systems. As I shall show in the next chapter on methodology of the NHI, however, the process is by no means so simple.

The Natural History of an Interview study was a pioneering exploration of human social communication in several respects. It was the first study to describe and analyze linguistic, paralinguistic, kinesic, and parakinesic modalities of communication as components of an integrated system. It was the first attempt to use microanalysis of behavior, involving both phonetic and frame-by-frame kinesic notation, in addition to macroanalysis. It was the most sophisticated study of behavioral cues to psychological processes. It was an interdisciplinary effort involving linguists, anthropologists, psychiatrists, and others which succeeded in fostering cooperation and exchange of information and ideas rather than competition. It was one of the first research projects in which the researchers studied their own communication patterns as well as those of the filmed subjects; the psychiatrists, especially Dr. Fromm-Reichmann, were familiar enough with the phenomena of identification, empathy, and counter-transference to be able to discuss these issues openly. Finally, the NHI study, while it never lost its focus on pathologies of communication, attempted in addition to describe the communication pattern of one family, including visual and audible components, as a socially patterned system, one which reflected as a microcosm patterns of behavior characteristic of larger segments of the society. The research team developed the theory and methodology necessary for adequate description of such patterns while conducting the study, so that the material led to consciously selected assumptions and the creation of tools, rather than theory and methodology predetermining the data. A discussion of these assumptions follows below.

3. The NHI: Assumptions.

This study, while it involved psychiatric researchers, was conducted within the "social" rather than the "psychological" point of view. The "social" assumptions were accepted: that social communication systems cannot be reduced to individuals or their interactions; that communication is multimodal; that communication involves varying degrees of attention and levels of intentionality; that communication is inherently neither good nor bad; that communication involves social groups rather than a dyad of sender and receiver, and multilayered exchanges rather than sequences of transmission; and that the communication researcher is a participant-observer.

While the NHI study is an elaboration of the descriptive linguistic approach, it incorporated ideas from dramatism, symbolic interactionism, behavioral programs, ethology, and other linguistic (such as sociolinguistic) fields. In addition, Bateson introduced concepts from communication-information theory; McQuown and others insisted that data from communication research on higher primates and other mammals be examined; and the psychiatrists pointed out the ramifications of primary process imagery and discussed the interpersonal psychiatry of Harry Stack Sullivan and others. The experiences of Bateson and Birdwhistell and others who had participated in such interdisciplinary, long term conferences as the Josiah Macy conferences reported in von Foerster (1951) and Schaffner (1956) indirectly benefitted the NHI team. An immense amount of intellectual synthesis took place as a wide intellectual context and history was brought to bear on specific questions about audible and visible human social communication.

The members of the NHI team most directly responsible for the assumptions listed below were Gregory Bateson, Norman McQuown, and Ray Birdwhistell. While Bateson wrote the first chapter listing assumptions, the triad was the source.

- A. The first assumption is that human communication is socially patterned and not reducible to individual persons, modes, or messages.

This assumption is a summary of the assumptions listed under the "social" paradigm in communication research. One corollary of this assumption is the methodological assumption that only after social level descriptions and explanations have been exhausted should behaviors be assigned to the residue category of purely idiosyncratic. Researchers who lack exposure to the communicational subgroups in this country often fail to realize that pronunciations or motions which seem to be peculiar to the subject are in fact representative of the subject's family, neighborhood, work group, or ethnic group. According to this assumption, the figure of idiosyncratic behavior can only be known in relation to the ground of social patterning.

A second part of this assumption is that human social communication is multimodal, multilevel, continuous, multilayered, and multireferential. Many senses are involved in mammalian communication, including that of humans, and the system cannot be reduced to speech alone. In addition, sound-producing modes are only a subset -- a small subset -- of all communicative motions produced by human bodies. All such motions are subject to social patterning; none is necessarily more natural or more arbitrary. Finally, no communicative interaction can be reduced to a single message with a single meaning; according to this assumption each message is related to other possible and actual messages, and to the social system. Each message can be seen as a line in an unwritten social drama.

B. The second assumption is that human social communication is punctuated into units.

We usually associate punctuation with the punctuation marks used in written prose and poetry as indicators of the kind of pause one would give when reading aloud and of the logical organization of the material into lists, expansions, or oppositions, for example. "Punctuation" is intended here in a broader sense of the dividing of experience into "chunks". Perceptions, according to Gestalt theory, involve groupings and integrations so that we seem to see patterns in randomly organized visuals and hear speech sounds rather than the continuously changing sound waves that spectrographs reveal. Gregory Bateson pointed out that we punctuate by selecting some differences as significant and ignoring others:

But if we start to ask about the localization of those differences, we get into trouble. Obviously the difference between the paper and the wood is not in the paper; it is obviously not in the wood; it is obviously not in the space between them, and it is obviously not in the time between them. (Difference which occurs across time is what we call 'change').

A difference, then, is an abstract matter.

Kant...argues that in a piece of chalk there are an infinite number of potential facts. The Ding an sich, the piece of chalk, can never enter into communication or mental process because of this infinitude. The sensory receptors cannot accept it; they filter it out. What they do is to select certain facts out of the piece of chalk, which then become, in modern terminology, information.

I suggest that Kant's statement can be modified to say that there is an infinite number of differences around and within the piece of chalk. There are differences

between the chalk and the rest of the universe, between the chalk and the sun or moon. And within the piece of chalk, there is for every molecule an infinite number of differences between its location and the locations in which it might have been. Of this infinitude, we select a very limited number, which becomes information. In fact, what we mean by information -- the elementary unit of information -- is a difference which makes a difference.

(Bateson 1972, 452-3)

According to this assumption, the differences which make a difference in human social communication are socially patterned. Each "chunk", bounded by a set of significant differences, is a range of experience. Speech sounds, for example, are ranges of articulatory productions rather than a single point on a graph:

Whether we like it or not, phonemes are not classes of things with mathematically or biologically or physically fixed boundaries. They are, rather, classes of behavior which are circumscribed and defined not by laws of nature, but by somewhat elastic and historically unstable rules of conduct, upheld by a desire and a necessity for conformity and uniformity, however ephemeral.

(Pulgram 1959, 152)

Each language has a different system of phonemes, dividing the continua of vocalizations into different emic categories with different boundaries. The NHI team, following Birdwhistell, LaBarre, Sapir, and Efron, extended this assumption to all nonverbal communicative behaviors as well. The assumption of emic social punctuation has been generalized by Pike as follows:

A BEHAVIOREME is an emic segment or component of purposive human activity, hierarchically and trimodally structured, having closure signalled by overt objective cultural clues within the verbal or nonverbal behavior of its domestic participants or domestic observers, and

occurring through its free or conditioned, simple or complex variants within a behavioral system (or a complex of systems) and a physical setting which are also emically, hierarchically, and trimodally structured. (Pike 1967, 121)

The emic unit is not a thing in itself but a part of the continuum which a social group perceives as "the same". This unit is a unit only in relation to other units in the system, and not in isolation. Thus /b/ as in "Bill" is a sound unit in relation to unvoiced units such as /p/ and /t/ and in relation to other voiced units such as /d/ in the English phonemic system. The sound that English speakers perceive as /b/ may be heard as either one of two sounds in languages which distinguish between a voiceless unaspirated stop /p⁻/ and a voiced unaspirated stop /b/. The same symbol, "/b/", can represent two different ranges of vocal behavior when it is used in the description of two different phonemic systems, because each language has different punctuation. In the same way, a head nod, brow raise, hand wave, bow, or kick is a unit in the American English kinesic system only in relation to the other units in the system.

The NHI team assumed that any perceptible human behavior was communicative in this sense: that members of a social group punctuate behaviors into emic units which can be described. The analyst's task is the description of the units into which the behavioral system is organized. It is further assumed that no behavior will be unassignable -- that all the behaviors recorded on sound film can eventually be described in terms of some unit. In addition, the absence of a behavior will be considered significant -- the lack of one component can result in a behavior being responded as if it belonged to one unit and not another. Thus a low back unrounded vowel sound will be differently

perceived than a low back rounded vowel sound in some languages.
 This is the meaning of Bateson's slogan: nothing never happens.
 Given the punctuation of experience into emic units by each social
 group, the absence of communicative behavior is impossible, as
 long as organisms are adapting to each other's behavior.

C. The third assumption is that
 these units comprise larger units
 in a hierarchy.

Descriptive linguists have found sound systems within
 morphological systems within grammatical systems within discourse
 systems or, to say it another way, phonemic units comprising
 morphemic units comprising grammatical units comprising discourses
 in a hierarchy, in every language studied. In English, for
 example, phonemes are units at the lowest level of the hierarchy;
 morphemes are units of the next higher level which are represented
 by phonemes; sentences might be seen as a next higher level.
 On each level, the units are in contrast with each other: /t/ rather
 than /d/, /s/ rather than /f/, and /a/ rather than /o/, for example.
 These are paradigmatic relations. Units from one level participate
 in larger units on the next higher levels, so that /p/, /i/, and /l/
 represent the morpheme "pill" (/pil/). If paradigmatic relations
 are "vertical", as in this example --

Give me the _____.
 pill
 bill
 till

-- syntagmatic relations imply a "horizontal" dimension, as in this
 example:

He looks well but they look sick.

Here the phonemic units are used to represent grammatical elements on a higher level of the hierarchy.

The concept of hierarchy has been most fully explored by Kenneth Pike et al. He posits three interrelated hierarchies in language; which he refers to as "part-whole hierarchies" rather than as taxonomic hierarchies of general and specific:

REFERENTIAL HIERARCHY: A purposeful event or an identified entity can be represented in language by various kinds of statements or naming devices. We may call the meaning of such a purposeful event or identity a concept, and different ways of talking about one of them as a paraphrase set. A concept with its paraphrase set makes up a unit of the referential part-whole hierarchy. A list of units of this hierarchy makes up an encyclopedia. ...

PHONOLOGICAL HIERARCHY: The relation of sounds to their containing (including) syllables, stress groups, pause groups, and rhetorical periods comprise the phonological hierarchy. ...

GRAMMATICAL HIERARCHY: When types of specific, dictionary (lexical) items or sequences of items serve as parts of larger units made up of such items, the relation of the included parts to types of including patterns (and, through the including whole, to each other) makes up a grammatical hierarchy. (Here the minimum dictionary entry is a morpheme, which may be part of a word; which leads, in turn, to successive potential inclusions in phrase, clause, sentence, paragraph, monolog, exchange, or conversation.)
(Pike and Pike 1977, 3-4)

The concept of hierarchy was extended in the NHI study. The research team developed a 143-line transcription staff representing units in contrast with each other on that level and participating in larger units on higher levels. No one level was designated central, and no one level was considered the primary locus of meaning. Rather, behavior of each class was assumed to contribute to the

meaningfulness of the interaction as a whole. Thus, microanalysis of brief scenes was performed in order to gain information about the larger patterns of relationships: the tiny motions employed by "Gregory" as he seemed to "light" his interviewee's cigarette, for example, provided clues to their relationship just as less fine-grained description of postures and speech provided clues.

The NHI team developed a second sense of the concept of hierarchy. Bateson noted that in bureaucracies and other social organizations, as well as in the perceptual mechanisms of the human body, upper echelons of hierarchical organizations did not have direct access to all the information available to lower echelons; information was necessarily filtered, integrated, and changed as it traversed the hierarchy toward the top. Freud had pointed out that consciousness was like the tip of an iceberg for this reason. Bateson went a step further, from the individual to the interpersonal. In each social communication system there is a hierarchy of information which is more or less conscious, more or less in focus, so that interactants are all consciously aware of a small, filtered part of their behaviors. Behaviors on the lower rungs of such an interpersonal hierarchy would not usually be directly available to the interactants. Within this shared area of unawareness would be many of the metacommunicational premisses about the universe of discourse, the nature of the interaction, the interpretation of messages, and the meanings of the communicative behaviors which determined the course of the interaction.

Given this interpersonal unconscious involving the basic premisses of interaction, each message would imply unstated rules about its meaning, purpose, and intention. These rules involve processes of

transference, projection, and identification, used by Freud to describe intrapsychic processes but extended by Bateson to interpersonal communication:

Also from Freudian theory, we accept a generalized notion of transference: that any persons emitting learned signals does so upon the (usually unconscious) assumption that the receiver of these signals will understand them 'correctly' -- i.e., he assumes that his vis-a-vis at the given moment will resemble psychologically some former (or even fictitious) vis-a-vis from whom he originally acquired his communicational habits.

When A 'projects' upon B, he is merely assuming that B's signals are to be interpreted as A would interpret these signals if he himself had emitted them.

A is said to identify with B when he starts to mold his own meaningful action in terms of what he thinks are B's principles of codification. (Bateson, Chapter I, NHI.)

In addition, the concept of interpersonal constraints on consciousness led to an extension of Freud's primary process to multiple reference of all messages in interaction:

What we know about language and communication in general indicates that there will always be one or more hierarchies of Gestalten which will be correct in the sense of describing how the message stream is created and how it is received and interpreted by the hearer. The Freudian findings also indicate that in any given instance several different interpretations may be correct. A particular message may be simultaneously interpreted in different ways by different levels of the mind: we face problems of multiple coding. (Bateson, Chapter I, NHI.)

The assumption of hierarchy, allied to the concept of interpersonal constraints on consciousness, leads to a view of meaning as a pattern function rather than as the association of each word with a single idea. At the lower levels of the hierarchy, the selection of one unit instead of another is meaningful -- this is differential or contrastive meaning. On progressively higher levels of the hierarchy, with larger units, there is more information and thus less range of interpretation. Given larger stretches of the interaction and repetitions of patterns, fewer interpretations can be used to account for the data. While the researcher can never attain a single, correct interpretation of meaning for any interaction, he can, given both microanalysis and macroanalysis of large stretches of natural interaction, come to a limited set of possible interpretations in terms of patterns. Within these patterns, the meaning of a unit is the difference it makes to the larger units and patterns.

D. The fourth assumption is that communication involves both digital and analog messages.

The NHI extended descriptive linguistic theory from the analysis of segmentals or units to the description of gradations. While traditional linguistics concentrated on phonemes, morphemes, and grammatical constructions, the NHI team followed George Trager's lead in developing descriptive categories for paralanguage. Bird-whistle also included descriptions of motion qualities as well as units.

Digital communication is represented by the "bit" of computer science, the message consisting of binary numbers which reflect

yes-or-no and on-or-off decisions. In general, digital messages consist of choices between mutually exclusive and exhaustive categories. Analog messages, on the other hand, reflect degrees of more or less of some quality. The rising level of colored fluid in a thermometer as an index of body temperature is an example of analog communication.

In human social communication, both kinds of messages are used. A speaker chooses phonemes but drawls out a vowel sound; a person signifies agreement with a head nod which has jerky and speeded up qualities; or a questioner raises the pitch of his voice higher than usual at the end of his utterance, for example. These qualifications of units, often lumped together as style and ignored, were described by the NHI team in terms of graded continua. Paralinguistic tempo, for instance, was described as double overfast, overfast, normal, overslow, and double overslow. These judgments were always relative -- a particular string was called overslow compared with similar strings in the same body of data produced by the same speaker in the same context. At any one level in the hierarchy, decisions about both segmentals and suprasegmentals could be made. Phonetic segments could be heard as longer or shorter, louder or softer, higher or lower in pitch, and fronter (or higher) or backed (or lower). Phonemic segments could be seen as lengthened or shortened, overloud or oversoft, overhigh or overlow, or more or less open or squeezed than would be typical for the speaker. At the top of the hierarchy, utterances could be seen in terms of units but also in terms of stylistic, rhetorical, and dramaturgical overlays. Rather than split segmental from suprasegmental and regard one as susceptible of description and the other as random or individual variation, the NHI team attempted the description of segmentals and suprasegmentals on all levels of the hierarchy as patterned.

E. The fifth assumption is that communication can be described as a system.

Communication theorists have taken the concept of system for granted in recent years. Dreissel, for example, states:

The advance of a general theory of communication requires that data produced through observation of artificially isolated subsystems be reintegrated into a complete system of data which matches the complete system of communicational behavior.
(Dreissel 1968, 20)

Yet the concept of system, for all its familiarity, is far from clear. For many social scientists, "system" implies the image of a bodily system such as temperature homeostasis or the mechanical system of a thermometer, thermostat, and heater. The organic metaphor is often used for language systems. Whitney, writing at the turn of the century, made this comparison:

A language, like an organic body,
is no mere aggregate of similar particles;
it is a complex of related and mutually
helpful parts.
(Whitney 1970, 19)

Organic systems, in contrast to mechanical ones, have characteristics of goal-seeking, growth, differentiation, hierarchical order, and control (von Bertalanffy 1974, 45 and 47). Living systems are capable of change over time, organized complexity, and the negation of entropy. Organic systems also tend to be open systems, exchanging materials and information with their environments and maintaining themselves over time under changing conditions. What remains the same in a changing living system is not the components but the organization:

The living organism is a hierarchical order of open systems. What imposes as an enduring structure at a certain level, in fact, is maintained by continuous exchange of components at the next lower level. Thus, the multicellular organism maintains itself in and by the exchange of cells, the cell in the exchange of cell structures, these in the exchange of composing chemical compounds, etc.
(von Bertalanffy 1974, 160)

If a system is defined as "sets of elements standing in interrelation" (von Bertalanffy 1974, 38), then a system is not necessarily closed or open, growing or static, or goal-seeking or purely mechanical. To define human social communication as systemic is minimally to describe it as composed of sets of sound elements which are interrelated. But the system, and the communication pattern, are not either the elements or their relations; rather, they are the organization, the characteristic structure and functions. This is the sense in which the NHI team understood the concept of system, and in which Bloomfield understood human language -- as patterns of relationships, hierarchically ordered, characterized by their organization. Human communication systems are more like the nervous system, concerned with relationships of information, than the homeostatic mechanisms of body temperature:

In a way, language is to the social organism what the nervous system is to the individual...
(Bloomfield 1970, 396)

and the components of human communication systems are patterns of messages.

Given this concept of human communication as systemic, certain implications follow. The component of any system, while it may be viewed by an observer as if it were a thing in itself, is from the system point of view a "partial", a piece of the puzzle which has significance only in the context of the puzzle and its relation to other pieces. The system components, as parts of whole patterns, may be enacted, produced, or contributed by different biological individuals. No single individual may control the entire pattern; in effect, each individual controls a certain percentage of the puzzle and may have many of his pieces in common with other individuals. Just as animals living in social groups divide the communicational labor so that some enact displays and others give responses and others provide a social context within which these displays and responses are appropriate, so in human social groups various members of the group may contribute different pieces to the communicational patterns. Birdwhistell has described human social communication in these terms:

I am positing that there exists a pattern of somatic influence composed of ordered partials within the somatic structure of the component organisms. These partials emergently combine to form interdependent patterns which are distributed regularly in the intercorporeal field. Thus, the viability of a particular organism is dependent upon appropriate somatic activity of other organisms in the multicorporeal field. To say it simply, in the viable social grouping there exists a series of biological acts which are necessarily intercorporeal if the given organism and, emergently, the multicorporeal field, are to survive. Thus, the individual incorporates part of a pattern which requires the activity of several organisms to gain completion.
(Birdwhistell 1968b, 8)

The human face has been viewed by one researcher as a component or partial in a larger social communicational system. Rather than assume that each face reflects racial and social group inheritances, Mair (1975) studied ways in which faces become communicational media in different cultures. His concern is not with the face of an individual as a body part but with the face as a pattern of messages:

The idea is that even before social patterning has occurred, the individual physiology is incomplete, only part of a system of which the other individuals possess the other parts. The fact that this social brain is not joined up by actual nerves but by the sensory modalities has obscured for us that the system is supra-individual, that to understand it we must study not what one individual possesses, but the patterns set up among individuals when they interact. (Mair 1975, 5. Emphasis in original)

Describing human social communication as systemic, then, implies a concern for system components, or partials, which participate in an organization of relationships comparable to an external nervous system spread through the social group.

F. The sixth assumption is that communication research is reflexive and transactional.

This assumption is an expansion of that mentioned under assumptions of the "social" approach to communication research: that the communication researcher is a participant-observer. The NHI team found that their research was reflexive in several senses. They learned to become aware of their own communication patterns, both as team members and as representatives of larger dialect and language

groups. They learned that different members of the team had different sensitivities, emotional reactions, and tacit meta-communicational assumptions when faced with one sound film. And when repeatedly exposed to the same recorded behavior, during grueling transcription sessions and when viewing the "Doris" film dozens of times, each team member became aware of his own selective perceptions.

In addition, the team found that different perspectives on the same phenomena resulted in descriptions which complemented rather than contradicted each other. The psychiatrists, linguists, kinecist, and anthropologists each had a particular disciplinary orientation and background of training which led to particular interpretations of the behaviors of interviewer and interviewees. Each member learned to see the film from the point of view of the others. In addition, each member learned to view the data from macroanalytic and microanalytic standpoints, again resulting in complementary and not contradictory descriptions. The perspective and depth of focus used led to different kinds of questions and answers, so that the inquiry was transactional.

This awareness of the reflexive and transactional nature of communicational research resulted in a careful statement of theoretical and methodological assumptions in the written NHI report, supplemented by descriptions of the researchers' experiences of increasing awareness of themselves as research instruments.

The following assumptions have been presented as basic to the NHI study:

1. That human communication is socially patterned and not reducible to individual persons, modes, or messages.
2. That human social communication is punctuated into units.
3. That these units comprise larger units in a hierarchy.
4. That communication involves both digital and analog messages.
5. That communication can be described as a system.
6. That communication research is reflexive and transactional.

These assumptions, explicitly stated, establish the framework within which the NHI study was conducted. The methodology developed by the team is consistent with these assumptions. The usefulness of stating assumptions in this way is twofold: the research can be evaluated in the proper context, and other researchers, assuming this context and given proper training, will be able to replicate the transcription and substantiate inferences drawn from this data. The methodology will be described in Chapter Six following, and examples of the kinds of data generated are given in Chapter Seven.

The reader should note that the source of these assumptions is the triad of Gregory Bateson, Norman McQuown, and Ray Birdwhistell primarily.

CHAPTER FIVE

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CHAPTER SIX
THE NATURAL HISTORY OF AN INTERVIEW:
METHODOLOGY

Confrontation with a sound motion picture of human behavior overwhelms the observer with a rapidly flowing and shifting scene of sound and motion. There seem to be no clear boundary points dividing the flow of events into discrete segments. ...The search for the units of behavior, their organization and their empirical validation, thus constitutes the central problem of behavioral analysis. (Condon 1967b,221)

The NHI methodology is an expansion and modification of the methodology of descriptive linguistics. Rather than the traditional division into two levels of phonology and grammar, the NHI approach led to a 143-line transcription staff. The entire process, starting with the obtaining of a corpus, including the notation and analysis, and ending with the kinds of questions that can be asked within this approach, is described below.

1. Obtaining a corpus.

Descriptive linguists begin with a body of data consisting of the utterances of a native speaker in the language they wish to study. This orientation toward recording samples of speech separated the descriptive linguists from prescriptive researchers who started with sets of rules for proper speech, and from theoretical linguists who began with theories of language and used data from various languages to support their claims.

The kind of speech samples recorded varies according to the researcher's purposes. Bible translators, for example, concentrate on the recording of legends, procedural discourses, and stories since their goal is the production of a text which will be comprehensible to native speakers despite its novel content of Bible stories. Researchers involved in bilingual education programs might focus on written materials in order to achieve their goal of producing educational textbooks and anthologies for classroom use. Descriptive linguists who are interested in describing the language in its own terms for the sake of increasing knowledge might record a wide range of speech productions, from casual conversation to formal recitations. Finally, a team such as the NHI team, with an interest in the particular event of an interview, would record samples of interviews.

While Bible translators and those who plan to produce written materials in the language under study would allow their informants to hear, edit, and in some cases help with phonemic transcription, descriptive linguists interested in the language as it is spoken in both formal and informal contexts would avoid editing and consider hesitations, false starts, and "errors" to be additional data for analysis. For this reason, the NHI team used tape recordings which began as soon as the equipment was set up and the social event underway, and ended with the end of the social event, providing a continuous record of what people actually said. This corpus provided slips of the tongue, filled pauses, mispronunciations, and otherwise "imperfect" speech for analysis. The emphasis in such a study is on what people actually say rather than on what they should have said or meant to say.

Audio tape recordings allow the linguist to replay a stretch of speech thousands of times without changing the permanent record of the interaction. This benefit is offset by the disadvantages of the recording process. The use of a microphone and tape recorder, no matter how subtle and discreet, influences the ongoing interaction. Since research subjects must give their permission to be recorded, the knowledge that their behavior is on record can lead to change even when the equipment is hidden from view. The sight of equipment and technicians also can lead to changes in behavior. In addition, the linguist and his technicians may give off messages which influence the ongoing interaction: a self-conscious technician who constantly calls attention to himself, one who seems to apologize continuously for making the recording and thus invading another's privacy, and one who puts his technical skill on exhibit on the center of the stage will have quite different effects from a technician who quietly goes about his business and blends into the woodwork. The fact that the observers affect the observed is brought out most clearly in situations where recordings are made, and the effects are difficult to predict.

A second disadvantage of the recording process is the technical requirement that recording be done in a setting which is quiet enough to allow a good signal-to-noise ratio. Interactions which usually take place in a noisy cafeteria or in a room with wood and tile areas which reflect rather than absorb noise, might have to be moved to a better location. Interactions involving several people might have to be rearranged in space so that each person is within range of a microphone. Subjects may have to be instructed not to play with or tap the microphones. Participants in events in neighboring areas may be asked to move or lessen their noise.

While some researchers try to solve these problems by moving their subjects into sound studios and instructing them to "behave naturally", others, especially field linguists, learn to find settings which are both technically suitable and socially acceptable to the subjects. The NHI team, for example, chose to use recordings made in the living room of the family under study. Unfortunately, the house was located near a railroad track, and the roar of rush-hour trains occasionally interfered with the speech recordings. Another solution adopted by the Studies in Human Communication department of Eastern Pennsylvania Psychiatric Institute in Philadelphia was to furnish a small studio with couches, chairs, and coffee tables so that it appeared to be a living room. Microphones in the ceiling allowed coverage for small groups of subjects. Tape recorders were located in a small control room which subjects were allowed to explore if curious. In addition to these physical touches, the staff took care to convey a matter-of-factness about recording which reduced the novelty and excitement of the experience and differentiated the experience of being recorded from the high-pressure situation of commercial TV studio recording. In these recordings and in the NHI study, the attitude of the interviewer and technical staff toward recording was a deliberately accepting one, conveying the message that there was really nothing to get excited about.

The NHI study used motion picture recording as well as audio recording so that body motion communication and spatial relationships of the subjects could be studied. The use of the camera created additional problems. Lights and an additional microphone were set up. Since the film was made in the subject's living room, the camera was operated approximately ten to fifteen feet from the subjects by a technician who unloaded and reloaded the camera every

three-and-a-half minutes with one-hundred foot rolls of film.

Action was confined to the couch and living room, a range which the tripod-mounted camera could cover, for the "Doris" film (GB-SU 5).

The technical problems of sound motion picture recording are far more easily solved than the issues of what to record. A useful research film must meet certain criteria which differ from those for instructional, documentary, experimental, and commercial entertainment films. As Van Vlack (1966) pointed out, the "research document film" is intended to record an event for analysis:

The fifth and new type of motion picture is produced under controlled, explicit conditions to produce a permanent record which may be repeatedly searched for the re-observation and re-analysis of the original ephemeral event.
(Van Vlack 1966, 15-16)

Such a film does not begin with a conceptual story board or written script; it does not involve professional actors or rehearsals; and it is not recorded in a professional studio with props. There is no "hero" or "heroine". There should be no editing, cutting, or rearranging of scenes. If more than one camera is used, all footage is preserved, rather than choosing some for the final version and discarding the rest. Finally, the cameraman's sense of aesthetics should not interfere with the material being recorded: a close-up of a person's face, while it might be a lovely visual image, excludes valuable information about the behavior of the rest of that person's body and the bodies of others in the interaction being recorded. If close-ups are desired, then one camera can be used to record the entire bodies of all interactants while another selectively focusses on individual body parts. All of this material must be preserved.

The sound track of a research document film consists of the vocalizations of the subjects being filmed, rather than of superimposed narration. Narrative remarks can be added to an edited version for public viewings, but the research footage should contain only the vocal and visible behaviors of the subjects.

The use of a frame-number roll allows each frame in the research document film to be identified by a six-digit number, usually printed in a contrasting color at the top of the frame. These frame numbers allow the researcher to correlate visible with audible behaviors according to an objective frame of reference; the NHI transcription arranges film frame numbers on the horizontal dimension along the top of the page so that each behavior can be referenced to time and both synchronies and dissynchronies noted. Researchers working with videotape rather than film can have digital time indications burned in on the tape for the same purpose.

The identifying characteristic of a research document film is its recording of an event and participants in their entirety. Decisions about the significance of behaviors are made during the inquiry process and not during the recording process. As much information as possible is preserved. Scheflen emphasized this requirement:

Since context analysis requires that we search and research the data and deal with each element of a unit, it is essential that we have a complete and consistent record. We cannot depend upon our memories or those of the therapist or patient because many components may be forgotten or distorted in these recollections. We cannot use a tape-recording alone because the non-linguistic behaviors are not picked up. At present, a sound motion picture is the necessary record for a context analysis.

This record of an interaction must be complete. Often the vital interchange at some second may involve the hands or feet of the interactants. In context analysis all actions are examined in terms of all others present. Accordingly, the cameraman must not pan the room or move in for a closeup, thereby cutting off some of the scene.
(Scheflen 1971, 401)

It should be noted that the "Doris film" fails to live up to these requirements. A continuous film record could not be obtained because a single, spring-driven camera which accepted only one-hundred foot rolls was used, leaving gaps when the camera was unloaded and reloaded. In addition, Gregory Bateson made editorial decisions during the interview, such as the decision to stop filming until "Billy" returned to the room. Finally, the cameraman tended to zoom in on "Doris" at moments of what appeared to be great emotional stress for her, and in so doing excluded information about the rest of her own body, "Gregory", and "Billy".

I have also emphasized the use of motion picture rather than videotape recording for two reasons. Historically, the NHI study was conducted at a time when analysis projectors were available for the frame-by-frame and slow-speed examination of 16mm film but slow-motion videotape playback recorders were not yet on the market. The use of a frame-number roll provided an external frame of reference at a time when digital time indications could not yet be superimposed on videotape. A study conducted in the late 1970's rather than the late 1950's might be better carried on with videotape rather than film. The researcher should also be aware that 8mm film technology now offers sound-on-film recording (with a magnetic stripe) and projectors which have "slow motion" and "stop-frame" modes.

Even when the technical problems are solved, and the researcher is aware of the requirements of a research documentary film, an even more difficult problem remains. The human social communication researcher interested in patterns of relationships cannot simply aim his camera and microphone in the general direction of some event, instruct his subjects to "act natural", and start recording, as a producer of home movies can. This research approach requires a long period of intensive observation before the camera is loaded. An investigator working with a language and culture strange to him must first acquire a facility in the language and speech situations in order to make sense out of the behaviors he records. A researcher working in his native culture must also learn the identifying characteristics of the event he wishes to record and its place within the larger social pattern.

The psychiatric interview, for example, occurs within a particular social context. The therapist has undergone special training and is located within an institution such as a hospital or clinic. The patient arrives at therapy with expectations about the kinds of help he can get and the behaviors he will have to perform in order to be "cured". Both therapist and patient have an understanding of the framework within which they will work: about appointments, punctuality, restraints on violence, emotional displays, permissions, therapeutic discourse, and the distribution of responsibility. A great deal of the time, especially in the beginning, may be spent on coming to an agreement on the framework. Both therapist and patient recognize certain clues that set therapy sessions off from other kinds of encounters. The researcher who wishes to investigate therapeutic interviews must learn the framework understandings, universe of discourse, and cues involved and, if he is participating in interdisciplinary research, the professional language of psychiatrists as well.

Extended observations of events such as the one which the researcher intends to record and analyze are useful for several reasons. One is that familiarity with the pattern of such events -- with psychiatric interviews, for example -- helps the researcher determine what to record and the representativeness of the behaviors recorded. Long periods of observation allow training of the researcher's Gestalt perceptual processes, so that he comes to recognize certain behaviors as parts of a pattern. When the same group of subjects is observed for a long period of time, the researcher-subject relationship can develop so that eventually the group accepts the researcher in a particular social role and can predict his behavior just as he can predict theirs. Some researchers bring their recording equipment with them on several occasions so that the subjects become accustomed to it and no longer react to it as novel and important. Finally, disciplined observation, including field notes and hypothesis-testing, trains the researcher as a social scientist, in that he learns to give loyalty to the behavioral patterns he observes rather than to pet theories.

2. Analysis of the corpus.

When a corpus has been obtained, the researcher makes an "etic" transcription of the entire corpus. Thus a linguist would make a phonetic notation, and a kinesicist would make a similar sort of "kinetic" notation. This notation attempts to record the behavior qua behavior without regard for the behavioral system of which it is a part. No decision is made at this point about the significance or lack of significance of any behavior; rather, all perceptible behaviors are notated within the limits of the notation system and the researcher's perceptions.

The following discussion will focus on the notation of linguistic behaviors for the most part, since the methodology is most fully developed in that field. It is assumed that the same procedures can be used, with some modifications, for research on communication in other modalities.

As oscillographic and spectrographic records reveal, the stream of speech is a continuous modulation of sound waves. There is no physical point at which a sound wave representing the speech sound /i/ changes into a sound wave representing the speech sound /e/. While we are accustomed to write with alphabetic symbols, and may assume that the stream of speech is similarly segmented, there is in fact no one-to-one correspondence between the sound units of our language and the sound waves we produce.

Phonetic transcription, using symbols such as those of the International Phonetic Alphabet, imposes an initial segmentation on the speech stream. These symbols were designed for use in the transcription of any language in the world, but reflect a European origin. Diacritic marks allow modification of the symbols so that a wide range of sound can be covered by each symbol. Thus the symbol [i] , for example, can be modified by diacritics showing raising, lowering, fronting, centralizing, backing, nasalization, laryngealization, or breathiness. The symbols are intended to characterize speech sounds in terms of their articulation by tongue, lips, and other movable parts of the vocal tract. Sounds involving full or partial blockage of the air flow (through mouth or nose) are classified in terms of eleven places of articulation and eight manners of articulation; those involving free flow of air are classed with respect to a schema of "cardinal vowels" in the IPA system.

An example of phonetic transcription of a phrase uttered by "Doris" follows:

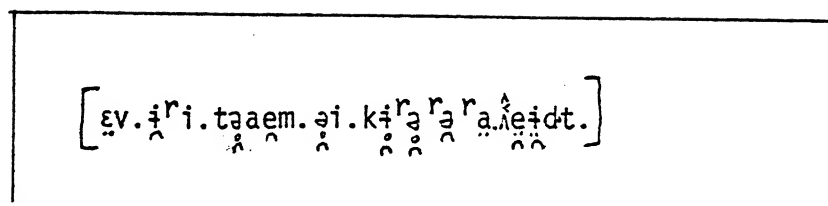


FIGURE VI-1: PHONETIC TRANSCRIPTION
(Transcription by N.A. McQuown)

Here the speaker is saying "...every time he cried...". The linguist has noted all perceptible segments and modifications, including the laryngealization of four vowels (indicated by double dots under the vowel) and aspiration of initial stops such as the [t] and [k].

It should be noted that modern linguistic theory has developed a slightly different approach to phonetic characterization of speech sounds. Jakobson, Chomsky, and others have proposed sets of universal features of speech sounds which are based on acoustic rather than articulatory factors. The feature set proposed by Chomsky and Halle is shown on page 108 above. Such feature sets were developed for a particular purpose -- that of describing commonalities and universal characteristics of speech sounds of all languages. The purpose of the descriptive linguistic approach described here is different. Descriptive linguists are interested in the contrastive-identificational characteristics of each language as a system.

A full phonetic transcription would include not only segments and their modifications, but also indications of tonality, intensity, and extent (referring to pitch, loudness, and length) and quality. McQuown has developed a phonetic transcription which includes

both the analog and the digital notations. An example follows:

* A continuous line could also be used.

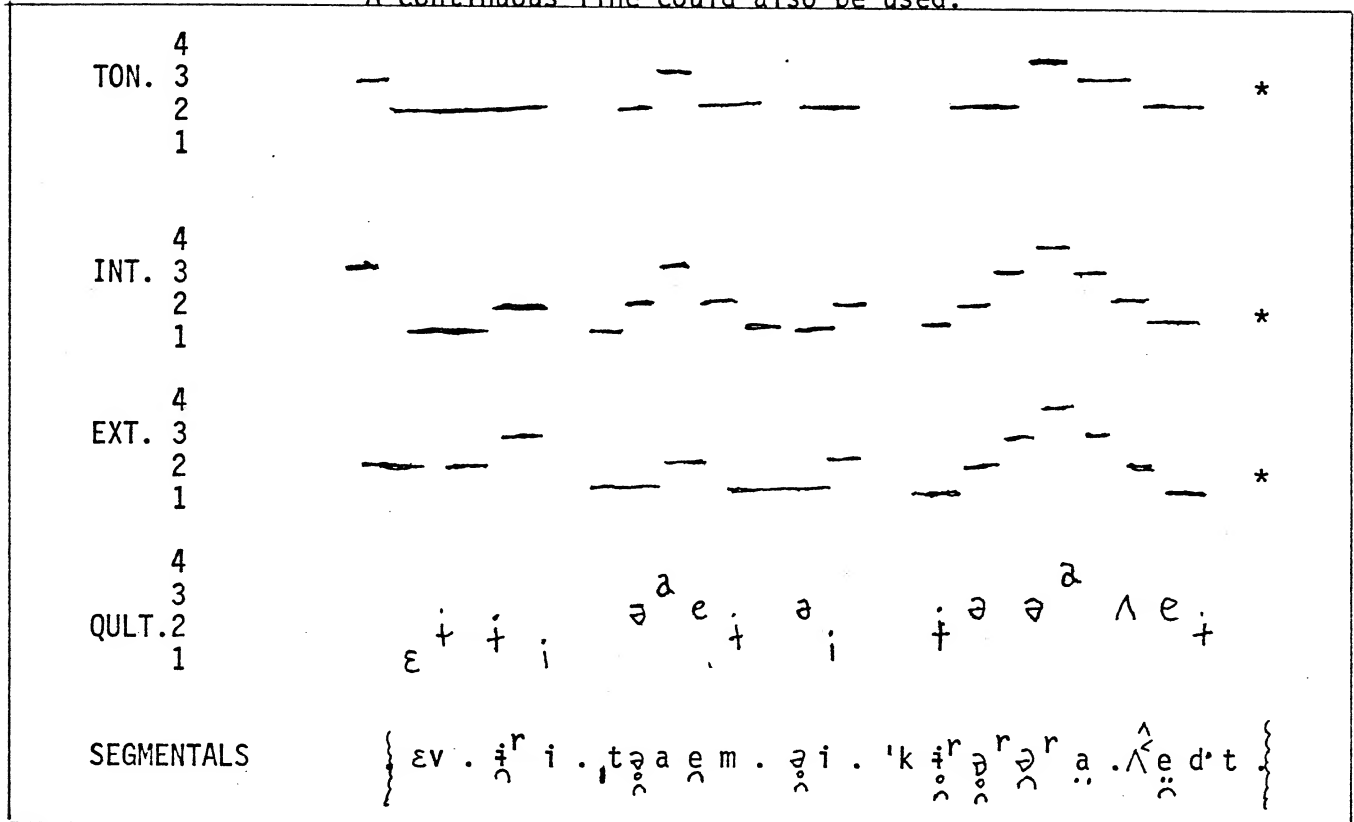


FIGURE VI-2: FULL PHONETIC TRANSCRIPTION
(Taken from N.A. McQuown)

On this level of initial transcription, the researcher attempts to record as faithfully as possible the sounds he hears with no analysis beyond the decisions demanded by the symbology of his descriptive system. He is concerned with perceptible differences at this point.

The next stage is that of phonemic analysis. In moving from the phonetic to the phonemic level, the researcher moves from recording to analysis. On this level, sound units, or ranges of sound which are responded to as "the same" by native speakers, are described.

The test procedure consists in part of the linguist asking an informant, a native speaker, to make the judgment of "same" or "different" about pairs of sounds. The linguist working with a native speaker of English, for example, could produce the pairs "pit" and "bit", "pet" and "bet", and "pin" and "bin" to test the initial consonant sounds. His informant would of course say that the members of each pair differ from each other. If the linguist produced the following pair, "p^hip" and "pip^h", where the only difference is in the aspiration of the "p" sound, his informant might reply that the two members of the pair sound the same. English speakers react to the phonetically different "p" sounds in "pin", "spin", and "rip" as if they were a single sound, the phoneme /p/. Similarly, English speakers react to the phonetically different "k" sounds in the words "cart", "cool", and "keep" as if they heard a single "k" sound, the /k/ phoneme. The linguist attempts to determine the differences that make a difference to native speakers by the "same or different" test using pairs that differ by only one feature whenever possible.

A second test procedure for determining phonemes involves phonetic similarity. The phonetic segments [p] and [b] form a suspect pair because they are articulated in the same location and with the same manner and differ with respect to one feature, voicing. The phonetic segments [p] and [g], however, differ with respect to so many features that no language is likely to class them as a single phoneme.

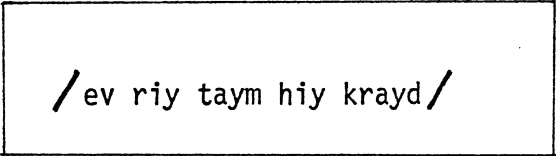
Another criterion for determining phonemes is that of complementary distribution. When two phonetic segments which are similar in production are found in mutually exclusive environments, they are candidates for membership in a single phoneme. If the phonetic segment [p]

is found only before voiceless stops and fricatives and pauses, and the phonetic segment [b] is found only between two vowels, then it is highly likely that [b] is a conditioned variant of the /p/ phoneme occurring intervocalically. If no pair of words can be found which is identical except for a [p] in one case and a [b] in the corresponding position in the other case, then the voicing feature does not provide contrastive information and the two variants are members of a single phoneme.

Another criterion for membership of phonetic segments in phoneme classes is pattern congruity. Each of the estimated five thousand languages in the world has a particular pattern of phonemes. In each case the contrastive features, or differences that make a difference, fit together into a system. In English, for example, the initial sound of "putt" contrasts with that of "but" in terms of the same feature of voicing which is utilized to contrast the initial sounds of "ton" and "done", "core" and "gore", "fetch" and "vetch", "sip" and "zip", and "thistle" and "this'll". Sapir stressed the importance of phonemic systems in determining phoneme boundaries:

Each member of this system is not only characterized by a distinctive and slightly variable articulation and a corresponding acoustic image, but also -- and this is crucial -- by a psychological aloofness from all other members of the system. The relational gaps between the sounds of a language are just as necessary to the psychological definition of these sounds as the articulations and acoustic images which are customarily used to define them. A sound which is not unconsciously felt as 'placed' with reference to other sounds is no more a true element of speech than a lifting of the foot is a dance step unless it can be 'placed' with reference to other movements that help to define the dance. (Sapir 1966, 20. *Italics in original*)

The results of a phonemic analysis of material earlier shown in phonetic transcription is shown in the figure below. Only segmentals are presented in this figure.



/ev riy taym hiy krayd/

FIGURE VI-3: PHONEMIC SEGMENTALS
(Taken from N A McQuown)

The same procedures of emic analysis can be followed for the intonation contours. While some linguists argue that pitch must be described as an analog phenomenon, the descriptive linguistic approach described here follows Wells, Trager, Hockett, McQuown, and others in the use of suprasegmental phonemes of pitch level, stress, and juncture. In this view, the same segmental material, when produced with different gradations of pitch, with differing stress patterns, or with different terminal junctures, will be responded to as "different" by a native speaker of English. The criteria of phonetic similarity, complementary distribution, and pattern congruity can also be applied. The reader may consult Crystal and Bolinger for a description of the point of view that pitch is an analog communication type.

Hockett, in Chapter Two of the NHI, described the framework for intonation contours, comprised of suprasegmental phonemes, in English. According to this analysis, American English employs five potential positions at which the pitch levels can change, four pitch levels, four stress levels, and three terminal contours.

This framework is diagrammed below:

POSITIONS	A	B	C	D	E
STRESS	^ \ U	^ \ U	/	^ \ U	^ \ U
TERMINAL CONTOUR					#
PITCH LEVEL	\pm	\pm	+	\pm	+
(\pm = optional; + = obligatory)					

FIGURE VI-4: Phonemic Suprasegmental Framework

Note that the framework of intonation contours is part of morphemic analysis, while the pitch levels, stress levels, and terminal contours are suprasegmental phonemes.

The short passage from the "Doris" film which was transcribed phonetically and phonemically above is shown below with intonation contour transcription:

2^{\wedge}_{ev} riy 2^{\wedge}_{taym} hiy 3^{\nearrow}_{krayd} $2 \rightarrow$
--

need stresses

FIGURE VI-5: Phonemic segmental and suprasegmental transcription
(Transcription by N A McQuown)


Only one pitch level, one stress level, and one terminal contour can appear at a position or change point. Restrictions of occurrence of pitch levels, stress, and terminal contours are discussed below.

According to this approach, every stretch of phonemic segmentals which includes at least one primary stressed syllable and one pitch level will have an intonation contour which falls within the matrix of the framework diagrammed in Figure VI-5. The positions A,B,C,D, and E represent change-points at which, if the syllable has some degree of stress, the intonation can change from one pitch level to another. The C position is the locus of primary stress and an obligatory pitch level. The B and D positions may have syllables with secondary or tertiary stress, which will be associated with pitch levels. Position E is always filled by a terminal contour and is marked with a pitch level.

English pitch levels are ranges of frequencies which are relative to the speaker, the speaker's physical condition, the discourse, and other factors; pitch levels are not absolute. The same speaker may change both pitch levels and the spacing between them as he moves from an intimate discourse to a public address to a large crowd, or as he moves to a state of fatigue or depression. Pitch levels must always be determined for each speaker, in each situation, by a method of contrasting the "low", "normal", "high", and "extra-high" pitch levels used contrastively within the particular corpus.

The number of pitch levels used contrastively must be determined anew for each corpus. While Trager, Hockett, and others describe American English as using four contrastive pitch levels, work on material representative of various dialects indicates that for some speakers only two pitch levels are used contrastively, with additional information carried paralinguistically (McQuown 1977). In general, each speaker tends to have a "normal" pitch, a higher step, and a lower step, although this tendency cannot be assumed but must be proven for any speech sample.

The reader may be able to hear pitch levels if he will say the following aloud:


How are you.

using a normal delivery. For many American English speakers, this utterance starts with the "normal" or "middle" pitch level /²/, moves to the relatively higher pitch level /³/ over the word "are", and falls to the relatively low pitch level /¹/ with the word "you". This sequence /²³¹/ is a typical pattern of pitch levels used for declarative sentences and "information" questions in English. The reader may get a sense of this pitch pattern by repeating the following aloud with normal delivery and listening to the rise and fall of his pitch:

How are you.

It's cold today.

His name is Harry.

I went to the train station.

In all cases, however, the pitch levels are relative to the speaker and relative to each other. For some speakers, pitch level /⁴/, an "extra high" level, may be used for emphasis. The reader may get a sense of four pitch levels by reading the following with dramatic delivery:

²What a⁴darling³little²doggie.

²Oh,¹I'm²just³so⁴happy!¹

If the reader happens to speak with only two or three pitch levels, however, he is likely to confuse paralinguistic overhigh with high pitch levels. It is necessary, for this reason, to judge pitch levels with

respect to all other pitch levels in a particular corpus, asking the question -- is this pitch level the same or different -- at each change point.

Pitch levels in American English are often closely related to stress levels. Stress phonemes are contrastive units of relative loudness and, like pitch, must be determined for each speaker and each corpus. There is no one-to-one correspondence between phonetic indications of intensity and phonemic classes of stress. Hockett, Smith, and others have described American English as having four levels of stress: primary stress /' /, secondary stress /^ /, tertiary stress /\ /, and unmarked or quaternary stress /^u /. Only one primary stress can occur in a phonemic clause (between two terminal contours). This primary-stressed syllable is the loudest syllable relative to surrounding syllables and without regard to other variations in length or pitch. Secondary stress can be heard in such words as "operator" in "élevator ^operator" and in "long" in "L\ong Ísland is a l\ong ísland". Tertiary stress can be heard in "refugee," in contrast to "effigy".

The reader should note that alternative analyses of American English stress have been performed. Pike, for example, found levels of normal stress, emphatic stress, and sentence stress. When grammatical patterns are taken into consideration, stress levels may be described as word-level, phrase-level, or sentence-level rather than as purely phonemic. From the NHI team's point of view, stress

levels are considered suprasegmental phonemes when the linguist is working on the phonemic level, and grammatical factors are not included at this level of analysis.

Terminal contours are suprasegmental phonemic junctures found at the ends of phonemic clauses. They are marked by pitch changes which may or may not be accompanied by changes in duration or intensity. Hockett described the "double cross" terminal contour /#/ as follows:

{it} involves a certain amount of stretching and fading the segmental material directly before, it is articulated somewhat more slowly than it would be with no TC, and the force of articulation decreases. When the PL at position E is /1/, /#/ also involves a lowering of pitch below the ordinary level for /1/ in otherwise similar circumstances.
(Hockett, Chapter 2, NHI)

In an alternative description, this terminal contour is referred to as the "falling" contour, represented by a falling arrow /↓/. Here only a fall in pitch is implied, since decreasing intensity and decreasing quantity may be independent phenomena.

Hockett's second terminal contour, /||/ or "double bar", involves a pitch rise at position E which does not attain the next higher pitch level, some stretching, and no fading. While /#/ typically occurs at the end of declarative and "information" question sentences, /||/ generally occurs at the end of "yes/no" questions. In an alternative description, this contour can be described as the "rising" contour which involves only a rise in pitch, /↑/.

Hockett's third terminal contour, "single bar" or /|/, involves stretching (lengthening) without fading or a change in pitch. This terminal contour is typically found at hesitation points which would be represented in written English with a comma. In an alternative

description, this contour is the "level" contour represented by a level arrow and involving a sustained pitch level, /→/.

Terminal contours, like pitch level and stress phonemes, must be established for each corpus. Some languages may have only two contrasting terminal contours, one final and one nonfinal, while other languages may have an expanded set with different contours used in different grammatical constructions.

Terminal contours may also have contrastive length. In one analysis, American English speakers have been described as using three lengths of terminal contours, "long", "normal", and "short" (McQuown 1977). This length feature is seen as an independently varying factor of terminal contours. Intensity may also function as an independently varying factor at terminal contour points. If pitch variation, length, and intensity are analyzed separately, contrastive units must be established within each corpus and for each speaker.

The reader should note that different languages structure variations in pitch, length, and intensity in different ways. "Tone" languages, for example, differentiate words which are identical in phonemic segmental content by lexical tones; a famous example is the Mandarin Chinese set of "ma" which has four different meanings signalled by four different word tones. Tone may also vary on the phrase, clause, or sentence level. Length may serve to contrast syllables, words, or larger constructions. Stress may function as a grammatical marker or to differentiate otherwise identical syllables, words, phrases, and larger constructions. There may be languages in which neither pitch nor length nor intensity functions contrastively, while other languages elaborate tonal, quantitative, and intensive contrasts. The particular structure must be analyzed for each language and can never be assumed.

The above description of phonetic transcription and phonemic segmental and suprasegmental analyses refers to the level of "phonology" in the traditional descriptive linguistic approach. All phonological analysis should ideally be performed without reference to grammatical factors, according to this point of view:

Descriptive linguistics is conventionally divided into two parts. Phonology deals with the phonemes and sequences of phonemes. Grammar deals with the morphemes and their combinations.
(Gleason 1955, 11)

Phonemes are considered to be sound units with differential meaning; their "meaning" is the fact that choice of one phoneme excludes choice of contrasting phonemes at any one point. Morphemes, on the other hand, are considered to be grammatical units with either functional or referential meaning:

Every morpheme is a minimal unit of a meaningful grammatical form. Each morpheme has a form which may be recognized in all of its occurrences...Each morpheme has not only a formal unity, but also a certain semantic value or 'meaning'.
(Nida 1944, volume 2, 113)

Morphemes may or may not correspond to words. In English, for example, the word "man" is a morpheme, while the word "ungentlemanly" is composed of several morphemes. The forms "un" and "ly" are affixes which appear in other constructions such as "unreal", "ungrateful", "surely", "beautifully", and "unmannerly". The form "gentle" can appear in a noun-modifying slot in such phrases as "the gentle horse", "a gentle dog", and "a gentle person", or in complement slots in such constructions as "he is gentle", "she is both kind and gentle", and "that dog is very gentle". The form "man" can be used in subject,

object, and complement slots in such constructions as "the man went to town", "give it to the man", and "he is a real man". While the forms "gentle" and "man" can be found in a dictionary with definitions of their semantic meanings, the forms "un" and "ly" have functional meanings of negation and grammatical category changer respectively.

Morphemes in other languages range from such modifications as aspiration and glottalization to relatively large constructions. Whorf's example of a Nootka construction (p. 150 above) shows six morphemes. Since each language has its own grammatical system, the researcher must start with the forms within a corpus which are similar in terms of phonemic representation, complementary distribution, pattern congruity, and meaning.

The English "plural morpheme", while spelled with the letter "s" in most cases of written English, has several phonemic representations in spoken English. The word "cat" is followed by the plural marker /s/; the word "cab" is followed by /z/; the word "spouse" is followed by /ɪs/; and the word "house" is followed by /ɪz/. These different manifestations of the plural marker can be predicted in most cases from the final sound of the stem word. Thus the plural marker is an abstract form, represented as $\{-iz\}$ by some analysts, from which each of the variations can be predicted for different phonological environments.

Morphemic analysis has traditionally been concerned with classification of forms into derived and inflected categories. Derivation typically involves the change of a form from one form-class to another through the addition of an affix or change in the stem; the addition of $\{-er\}$ to "play" leads to a change from verb to noun, for example. Inflection generally implies changes in a form according to a paradigm

within a single form-class; the paradigm of boy/boy's/boys/boys' is one example.

The reader should note that two alternative views of linguistic analysis have been developed. The first, tagmemic analysis, developed by Kenneth Pike and associates, does not separate phonological from grammatical analysis. While the tagmemic approach does include phonemic analysis using the criteria of "same or different" tests, phonetic similarity, pattern congruity, and complementary distribution described above, it allows grammatical information to be used in the determination of phonemes in cases where variations of phonemes are conditioned by the grammatical rather than by the phonological environment. The tagmemic approach also posits "form-meaning composites", or tagmemes, as the basic structural elements of a language. A unit in the grammatical hierarchy must have both formal and semantic unity according to the tagmemic view, while traditional descriptive linguists tend to concentrate on formal unity alone.

The second alternative view is that of transformational grammar, first propounded by Noam Chomsky. In this view, no separation of phonology and grammar can be made since no phonemic level is assumed. The basic elements of a language are morphemes which are actualized in speech according to certain rules of phonetic and grammatical transformation. While traditional descriptive linguists begin with records of actual speech and perform analyses in order to discover morphemes and phonemes, transformational grammarians start with morphemes and sentences on a "deep structure" level and perform analyses of the rules by which such structures are transformed to "surface" level phonetic productions. This difference reflects the difference in purpose for

the two traditions: descriptive linguists are concerned with the sound and grammatical systems of each language described in its own terms, while transformational grammarians are concerned with universals of human language and cognitive and psychological factors common to all humans.

According to the descriptive linguistic approach adopted by the NHI team, grammatical description involves both the analysis of morphemes and the description of arrangements of morphemes, or syntax. The basic test procedure of asking a native speaker whether or not two forms are the "same" or "different" is employed for grammatical as well as phonological analysis. Syntactical analysis starts with a construction such as a sentence, e.g., "the old man who lives there has gone to his son's house". The sentence is broken down into its immediate constituents by making substitutions:

The	old	man	who	lives	there	has	gone	to	his	son's	house
the	graybeard		who	survives		went		to	that		house
the	graybeard		surviving			went		to	Boston		
the	survivor					went		there			
he						went					

FIGURE VI-6: SYNTACTIC ANALYSIS
(From Gleason 1955, 130)

Successive cuts and substitutions are made until the smallest unit is reached. Alternatively, the linguist can start with basic constructions such as "he went" and ask the informant for larger and larger substitutions.

In this example, the sentence "the old man...son's house" is a construction, such phrases as "old man" and "has gone" are constituents, and such words as "the", "old", and "man" are immediate constituents, according to the

Gleason's definitions:

A construction is any significant group of words (or morphemes).

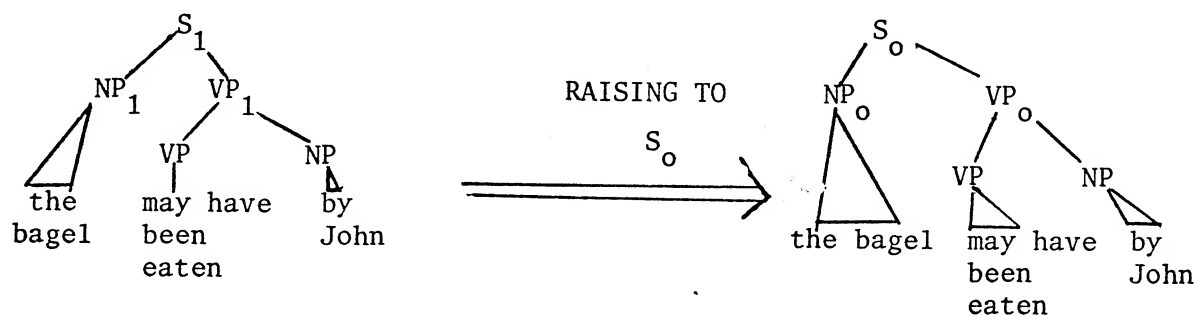
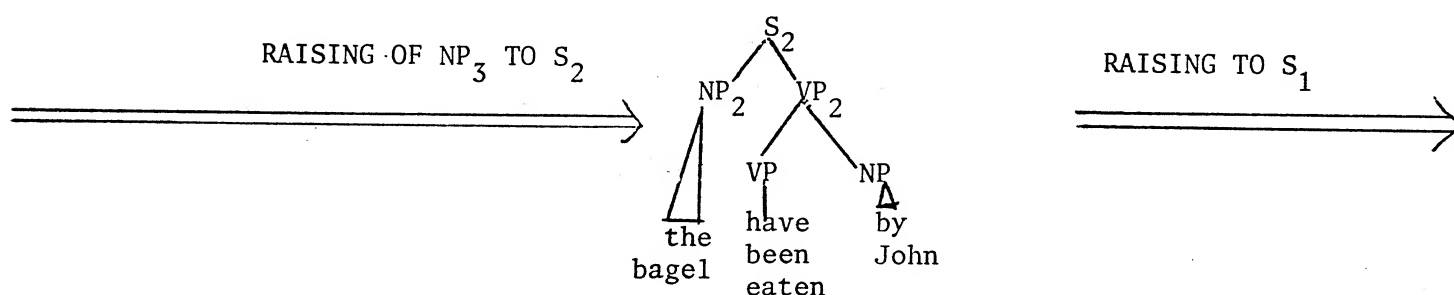
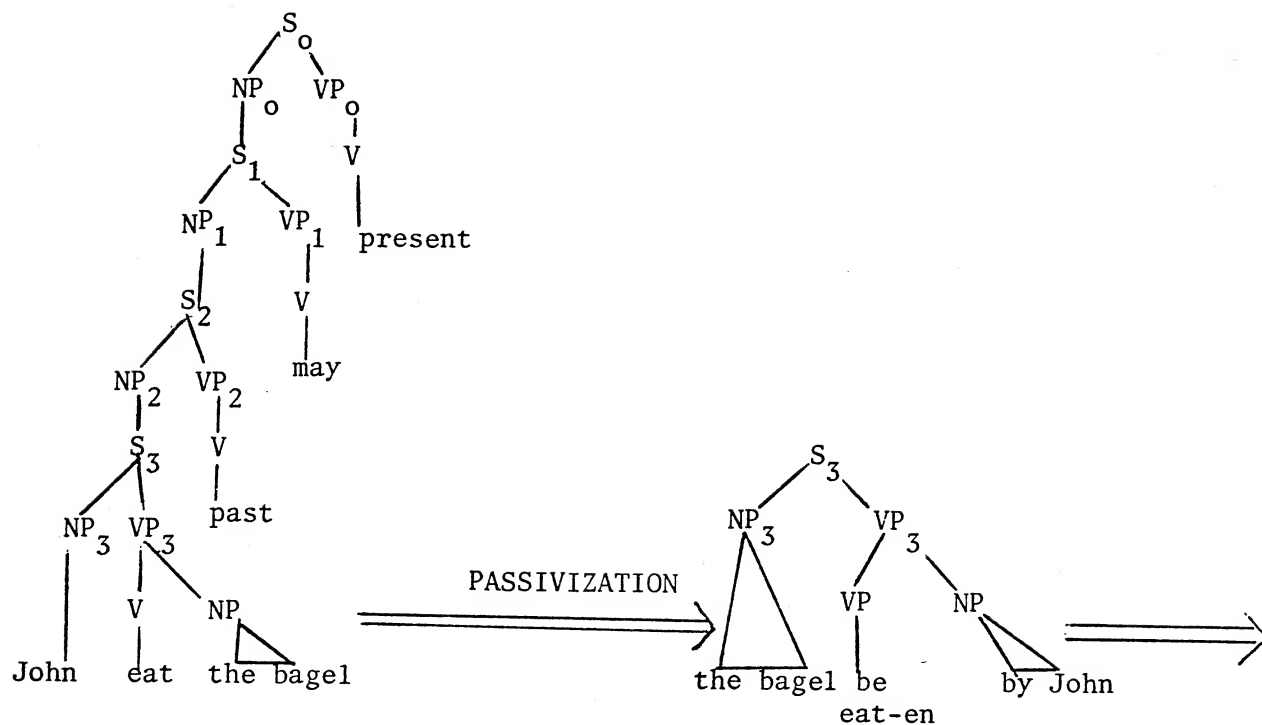
A constituent is any word or construction (or morphemes) which enters into some larger construction.

An immediate constituent (commonly abbreviated IC) is one of the two, or few, constituents of which any given construction is directly formed. (Gleason 1955, 132-133)

Syntactic analysis thus consists of finding constituents of constructions and the IC's of those constituents along with the arrangements and relationships among constituents. This process must be carried on for every language, starting with a particular corpus, since it cannot be assumed that a language will have the form-classes used in other languages, according to this view.

Current transformational grammar posits two levels of language, one of "deep structure" and one of "surface structure", related by rules. Using such ambiguous sentences as "Flying planes can be dangerous", and sentences which imply component sentences such as "Tom seemed to hate himself" and "Mary refused to promise John to marry Bill", these linguists claim that analysis which starts with surface-level productions is inadequate. A diagram of the sentence, "The bagel may have been eaten by John" which starts with the "deep structure" kernel sentence "John eat the bagel" and shows successive transformations until the surface form is reached follows:

FIGURE V-7: T-G SYNTACTIC ANALYSIS



The discussion so far has involved traditional linguistic linguistic procedures, with indications of alternative points of view held by linguists. The importance of the NHI study, however, rests on its expansion of this methodology to paralinguistic and kinesic behaviors. Paralanguage includes all of the suprasegmental gradations and modifications used by speakers of a particular language or dialect. Kinesics includes segmentals and suprasegmentals of body motion found with the discovery procedures outlined above. In both cases, behaviors which were previously assigned to the categories of random, "emotional", "expressive", or idiosyncratic behavior were shown to be not only describable but also systemically structured.

3. Paralanguage.

The NHI team assumed that paralinguistic behaviors could be described as socially patterned and were not completely different in nature from linguistic behaviors. Rather than assume that words and sentences carry meaningful information but paralanguage carries only emotional information, the researchers assumed that the phonological, suprasegmental, and paralinguistic levels of vocalizations may be crosscut by referential, psychological, and social dimensions. Words contribute to emotional messages and paralanguage contributes to semantic information, and both words and paralanguage may contribute to social information, according to this view. The information is not predetermined by the level or modality used.

Information about a speaker's place of birth, for example, may be conveyed by his phonemic system; his suprasegmental stress, pitch level, and terminal contour patterns; and his paralinguistic behaviors. Information about the speaker's psychological state may be conveyed by his monotonous voice, slowed tempo, drawl, sighs, choice of words, and slurred delivery. Referential information may be conveyed not only by words but also by stress, paralinguistic emphasis, and terminal contours. Information about the context of the ongoing interaction may be conveyed by hypercorrection of pronunciation leading to a shift in phonemic patterning, by intonation contours thought appropriate, and by paralinguistic overprecise articulation, in addition to the selection of lexical items.

Paralinguistic categories used by the NHI team include two main divisions into voice qualities and vocalizations. The voice qualities include pitch range, pitch control, vocal lip control, glottis control, articulation control, rhythm control, resonance, and tempo. Vocalizations include the vocal characterizers of laughing, crying, yelling, whispering, moaning, groaning, breaking, belching, and yawning; and the vocal qualifiers of pitch height, intensity, and extent; and the vocal segregates. This taxonomy is summarized below:

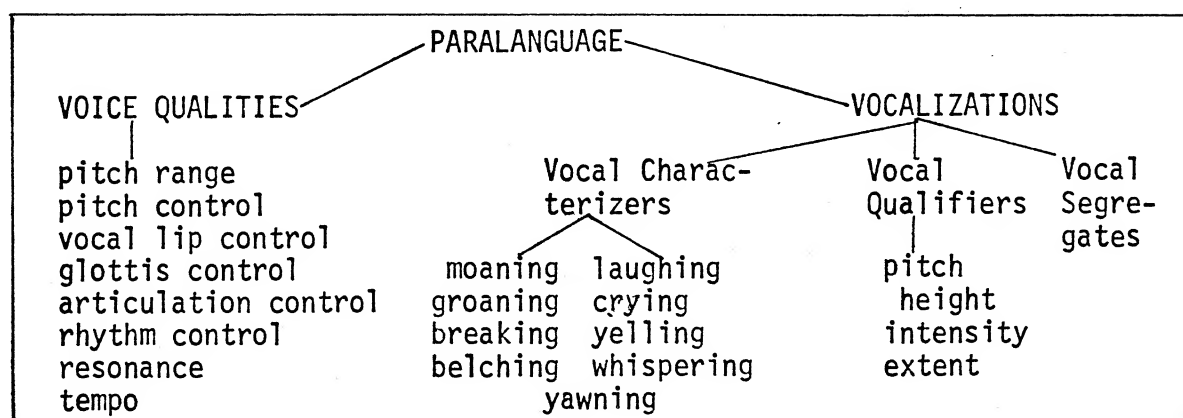


FIGURE VI-8: PARALINGUISTIC CATEGORIES

Pitch range* refers to the relative "distance" between pitch levels. One speaker may employ a wide range of variation, from high to low frequencies, while another may reduce the range to small variations in pitch. The paralinguistic modification of either spread or narrowed pitch range is judged relative to the speaker's normal patterns. Thus, for a speaker who typically uses nearly monotonous patterns with little variation in pitch, the use of relatively higher and lower pitch levels on some occasion is an example of spread pitch range, despite the fact that the range of frequencies measured on spectrographic records is more constricted than that used by another speaker's typical productions. Pitch range may vary from one to two degrees of "spread", symbolized as \updownarrow and $\updownarrow\updownarrow$ or may be one \downarrow or two $\downarrow\downarrow$ degrees "narrowed," relative to the speaker's typical pattern in this corpus.

Pitch height, on the other hand, refers to the use of "overhigh" or "overflow" pitch levels over a stretch of speech relative to his normal patterns. The pitch levels are all pushed up or down, with relatively little change in the "distance" between each level and the next. The reader may get a sense of "overhigh" pitch if he will read the following aloud with a dramatic delivery of the underlined part:

He did it once, he did it twice,
he did it over a hundred times.

"Overhigh" pitch height can be transcribed as $\uparrow - \uparrow$ where the level is one degree overhigh and $\uparrow - \uparrow$ for two degrees. "Overflow" pitch height can be transcribed as $\downarrow - \downarrow$ for one degree and $\downarrow - \downarrow$ for two degrees. For both pitch range and pitch height, the "normal" or unmarked level is assumed when no transcription is made.

* or pitch width

Pitch control refers to the speed and smoothness with which a speaker shifts from one pitch level to another. This feature is also judged relative to the speaker's normal pattern. The transition may be sharp or smooth, symbolized as $\uparrow\downarrow$ and $\nearrow\searrow$ respectively. The reader may get a sense of pitch control by reading the following aloud and paying attention to the movement of his voice from one pitch level to the next:

He what?

I wonder what's keeping him.

The first utterance may give a sense of jumping abruptly from a low pitch level to a high one, while the second utterance may give a sense of smoothly gliding from one pitch level to the next.

While I have discussed these three paralinguistic pitch features together in order to contrast them, they actually belong to different categories in the paralanguage taxonomy. Pitch range and pitch control are voice qualities, while pitch height is a vocal qualifier. Voice qualities are modulations of the quality of the vocalization, and probably could be used to describe vocalizations of singers and nonhuman primates as well as speech productions. Vocal qualifiers, on the other hand, are modulations of the linguistic variables of frequency, loudness, and length which function on other levels to give grammatical and phonological information.

Tempo is another voice quality which should be contrasted to the vocal qualifier of extent. Tempo refers to the relative speed of speech judged with respect to the speaker's typical speed in a corpus. Tempo may vary from one degree "overfast", symbolized as $>- ->$, to two degrees $>>- ->>$, and from one degree "overslow" $<- -<$ to two.

While it would be normal and unmarked for an AM radio disc jockey to speak quite quickly, it would be marked "overfast" when a minister, in the midst of a carefully delivered sermon, suddenly speeds up for a stretch. Americans are somewhat aware of tempo and both apologize for "speaking too fast" (with the assumption that their normal speech rate is slower) and criticize others who speak "too slow" (with the assumption that they have deliberately slowed down).

Extent is a vocal qualifier which refers to the stretching ("drawling") or shortening ("clipping") of syllables. In a language such as English in which there is no phonemic contrast between long and short vowels, lengthening of a vowel, as in

He was sooooo sad...

must be analyzed as paralinguistic. Note that drawling and clipping (symbolized by \curvearrowright $\curvearrowright\curvearrowright$ for one and two degrees of drawling and \cup $\cup\cup$ for one and two degrees of clipping) are determined relative to the speaker. In some dialects of American English, lengthened vowels may be linguistic rather than paralinguistic.

Three voice qualities will now be described. Vocal lip control refers to the degree of openness of the vocal "cords". When the cords are held tightly together and air is forced through, the resulting voice quality is "rasped" (symbolized as $\text{q} - - \text{q}$). When the cords are held relatively far apart, the voice quality which results is "open" (shown as $\text{o} - - \text{o}$). Glottis control refers to the degree of voicing used. "Breathiness" results from the passage of more air than usual through the lower vocal tract and can be heard in the speech of a person who has yet to "catch his breath" after running.

Moving in the other direction, "voicing" varies from "under-" to "over-voicing". The reader should note that alternative categorizations have been proposed by Ladefoged and Pike for degrees of sub-oral strictures. Finally, articulation control refers to the precision with which vocal cords, tongue, lips, velum, and other organs of speech are managed. Relaxation, fatigue, and drunkenness may result in "slurred" or "sloppy" articulation, while the speaker may be "overprecise" in an interview situation.

Resonance is the voice quality of fullness or thinness resulting from the placement of the larynx during speech. Opera singers are trained to achieve resonance by lowering their larynxes so that the fundamental frequencies of their vowels will be amplified by their oral and nasal cavities.

Rhythm control, the final voice quality, refers to the smooth or jerky quality of speech judged relative to the speaker's typical pattern. Smooth rhythm may involve regular spacing of stresses and pauses, while jerky rhythm is characterized by an irregular underlying beat.

Intensity is the final vocal qualifier to be discussed. It refers to relative overloudness (symbolized as $\wedge - - \wedge$ for one degree and $\hat{\wedge} - - \hat{\wedge}$ for two degrees) or oversoftness (shown as $\vee - - \vee$ or $\check{\vee} - - \check{\vee}$) for a stretch of speech. Storytellers may use the dramatic device of paralinguistic oversoftness and overloudness to emphasize certain sections, and in conversations the use of "sotto voce" remarks may reflect oversoftness.

This list of voice qualities and vocal qualifiers may well not be exhaustive for speakers of American English, and a new list may have to be established for each language. It is extremely difficult

to separate linguistic suprasegmentals from paralinguistic modifications without extensive training in transcription. While we have already been trained to respond to paralinguistic variations as members of a speech community, we have also learned systematically to disattend many of these behaviors or, at best, refer to all of paralinguistic as "tone of voice" and angrily retort: "It's not what you said, it's how you said it!". This list represents an initial taxonomy of such behaviors.

The paralinguistic vocal characterizers are patterned modes of speaking which vary from speech community to speech community. The NHI team listed laughing, crying, yelling, whispering, moaning, groaning, breaking, belching, and yawning as a first approximation. ("Breaking" refers to a pseudo-humorous "quaking" of the voice). Rather than assume that these modifications of speech are outside of language or merely physiological, the NHI team described them as paralinguistic modifications of language. The speaker may talk while simultaneously laughing or yawning, for example, and since the same organism is producing both the speech and the vocal characterizers, it was assumed that he would be in control of both, even he may have excluded the vocal characterizer from his awareness.

Vocal segregates are morpheme-like items which lack either a clear dictionary meaning or functional meaning. Such items as "um", "er", "ah", and "mm", which fill pauses, are patterned differently in different languages (see for example Key 1975, 41-45). Vocal segregates may also differ from the units of the language in that sounds which are not part of the phonemic pattern may be employed. English speakers produce clicks (written as "tsk tsk" or "tch tch" in prose), snorts, and sounds indicating disgust (often using velar fricatives) paralinguistically but not linguistically.

An alternative taxonomy of paralinguage has been developed by David Crystal and associates for a corpus of British English. Since no study has yet used the paralinguistic categories developed by the NHI team (and George Trager and Henry L. Smith) and the Crystal categories for a single corpus, the linguistic researcher makes an almost arbitrary choice of one system or the other. The NHI team chose to develop the Trager-Smith system because it was consistent with the descriptive linguistic approach and because reports of Crystal's works were not available until 1964. Any researcher who attempts paralinguistic transcription now ought to compare the two systems carefully before choosing one and, ideally, learn to use both systems.

Both linguistic and paralinguistic behaviors are described with reference to the "voice base" and "voice set" of the speakers. These categories are described below.

4. Voice Base and Voice Set.

The voice base categories listed by the NHI team include position, sex, age, state of health, body build, rhythm phase, location, mood, toxic state, and n-state. These categories refer to characteristics of the speaker's voice which we take as a baseline and which change little if at all during an encounter. Crystal described voice base, terming it "voice quality" as follows:

Voice-quality is thus a single impression of a voice existing throughout the whole of a normal utterance (i.e., excluding deliberate simulation of a different quality, physiological change, or environmental distortion): it corresponds to a combination of independently varying acoustic and articulatory parameters, of which the most important attributes are pitch, loudness, duration, and timbre...It now seems

generally agreed that a phenomenon of voice-quality exists independently of the linguistic contrast available in the speech-community, and that this quality has the main function of identifying individuals.
(Crystal 1969, 123)

The NHI team differed from Crystal, however, in their assumption that each speech-community has a limited range of voice-base choices available to its members, so that social patterning affects voice base in addition to genetic and physical factors. Those whose voice base falls outside the range of acceptable qualities for any group will usually be stigmatized. The list of voice base categories must be established anew for each language for this reason, although most of the categories listed by the NHI team will probably be applicable.

"Position" refers to the speaker's actual social position in terms of class, caste, clan, or other grouping. "Sex" refers to biologically-determined sex. "Age" refers to age in years. "State of health" refers to a relatively objective assessment of the state of medical pathology or health. "Body build" refers to the height, weight, musculature, and configuration of the body. "Rhythm phase" refers to the temporal patterns of interaction measured with respect to time (see for example Chapple's work on the "Interaction Chronograph"). "Location" refers to the physical setting and social occasion. "Mood" refers to the interactant's psychological or physiological state of arousal or emotion. "N-state" is simply a slot into which new categories can be inserted as needed.

While these ten categories are relatively objective and could in most cases be correlated with physical measurements, the

next ten categories, under voice set, refer to messages about such states. "Status", for example, is the projected message about social group membership which may or may not correspond to "position". The comedy "Pygmalion" commented on this ability of a lower-class woman to impress upper-class members with her high status by her linguistic and kinesic behavior.

"Gender" is the sexual identification of an individual as communicated behaviorally. Transsexuals, homosexuals in drag, and hermaphrodites can sometimes project a sexual identification counter to that with which they were born. Goffman explored "gender advertisements" in a recent study of photographs used for magazine advertisements and described the postures and behaviors which served to identify gender:

I have here taken a functionalist view of gender display and have argued that what, if anything, characterizes persons as sex-class members is their competence and willingness to sustain an appropriate schedule of displays; only the content of the displays distinguishes the classes.
(Goffman 1976, 76)

At a time of unisex clothing and hair styles these behavioral cues to gender identity become even more important.

"Age grade" refers to the projected image of childishness, senility, maturity, or adolescence given off by an individual. One person may behave as if he or she changed age during a single conversation, and actors are trained to move and speak appropriately as the character they portray grows older or is seen in a flashback.

"Health image" refers to the behaviors by which others are informed about the individual's real or imaginary state of health. Birdwhistell described the messages used in two Kentucky communities (1970, 209) to indicate illness. Doctors with large practices have to learn to interpret their patients' varying behavioral symptoms of the same disease. Three categories listed by the NHI team for health image are "robust", "healthy", and "sickly".

"Body image" refers to the total impression of body size and shape. This image may differ from the actual physical characteristics, as when small men seem to loom large. The categorization of bodies into classes which correspond with personality types is part of the neo-Reichian approach in psychotherapy. Lay evaluations of body images include such adjectives as "heavy-set", "skinny", "big", and "small". Often such evaluations can be made by listening to a tape recording of the voice of a stranger.

Rhythm image" refers to the general characteristic of rhythmicity projected by a speaker. The NHI team listed categories of "swinging" and "restrained" rhythm images to characterize speakers who paced themselves according to an underlying beat and those who seemed more cautious and controlled respectively. The neutral category is "equipoised".

"Locale" refers to the impression that a speaker is addressing himself, his audience, or a wider and perhaps invisible audience, labeled "intrajecting", "interjecting", and "projecting" respectively by the NHI team. These categories are based on the voice quality which gives the impression of the kind of audience being addressed rather than to the number of people actually present. A conversationalist speaking with one other person may drop into a brief monolog addressed to himself or may change to a soliloquy addressed to the gods or posterity or his

absent family, for example. Carey (1976) notes that politicians videotaping political commercials tend to project their voices as if they were addressing a crowd despite the fact that a normal speaking voice would be adequate given the technological advances in sound recording.

"Mode" refers to a projected mood. The most forlorn mourner at a funeral is capable of switching into laughter and back to grief in a matter of moments, for example. Some speakers, such as "Doris", are capable of projecting more than one mode nearly simultaneously. The mode projected may or may not have any connection with the actual state of emotional or physiological arousal. Actors and spies are especially capable of projecting a mode at will.

"Toxic image" refers to the projected state of consciousness. A speaker may give the impression of extreme drunkenness, for example, when he is in fact quite sober. Similarly, a worshipper participating in a charismatic service may project a state of ecstasy and exaltation which may be contrary to fact.

There may well be other categories of voice base and voice set phenomena both for American English and for other languages. These factors are often difficult to describe since they are learned for the most part informally and with relatively little awareness. These factors enable us to instantly recognize the voice of a friend on the telephone and make decisions about the emotional, physical, and mental state of a stranger from a sample of his voice. The NHI study attempted to make these factors explicit and to show the extent to which they are socially patterned.

We have so far discussed the first 48 lines of the NHI transcription staff. A page of transcriptions of speech will have units of time or film-frame numbers arranged sequentially on the horizontal dimension along the top of the page and these lines on the vertical dimension on the left hand side of the page. The Linguistic categories are summarized below:

FIGURE VI-9: LINGUISTIC CATEGORIES
THE NHI TRANSCRIPTION STAFF

LINE	LINGUISTIC CATEGORY	
Vocal activity		Paralanguage
Voice Base		Vocalizations
1 position		Vocal Characterizers
2 sex		29 laughing
3 age		30 crying
4 state of health		31 yelling
5 body build		32 whispering
6 rhythm phase		33 moaning
7 location		34 groaning
8 mood		35 breaking
9 toxic state		36 belching
10 n-state		37 yawning
Vocal activity		
Voice Set		Paralanguage
11 status		Vocal Qualifiers
12 gender		38 pitch height
13 age grade		39 intensity
14 health image		40 extent
15 body image		
16 rhythm image		Paralanguage
17 locale		Vocal Segregates
18 mode		41 vocal segregates
19 toxic image		
20 n-status		42 PHONETICS
Paralanguage		
Voice Qualities		Language
21 pitch range		Phonemics
22 pitch control		43 intonation
23 vocal lip control		44 stress and juncture
24 glottis control		45 segmentals
25 articulation control		
26 rhythm control		Morphemics
27 resonance		46 intonation
28 tempo		47 stress and juncture
		48 segmentals

5. Kinesic analysis.

One of the most controversial issues in the field of human social communication is that of the relationships among speech and body motion communication. An unfortunate polarization has occurred. Some researchers assume that body motion communication is so different in nature from, and carrying different messages than, speech that the methodology of descriptive linguistics cannot be used to analyze body motion. On the other hand, other researchers, including those on the NHI team, assume that body motion communication is learned by members of a social group, just as speech is, and while body motion communication may or may not be organized on an analogy to language, the descriptive linguistic methodology of analyzing behavior into emic units and hierarchies can still be used.

It was hypothesized by the NHI team and by Dr. Ray Birdwhistell in particular that body motion communication units corresponding to linguistic units would be found in the corpus of the "Doris" film if the same discovery procedures were used. These body motion units were termed "kinemes", "kinemorphemes", and "kinemorphic constructions" as a reflection of the linguistic units of phonemes, morphemes, and syntactical units or constructions.

Lines 52 to 138 of the NHI transcription staff were devoted to kinesic transcriptions of "body base", "body set", "paramotion", and "motion", on an analogy to "voice base", "voice set", "paralanguage", and "language". Additional lines for "action modifiers", "interaction modifiers", and "motion markers" were established to include kinds of body motion behaviors not indicated by the linguistic and paralinguistic categories.

A conceptual problem involved in kinesic transcription is the clearly interpersonal nature of much body motion communication. While linguists can analyze the speech and other vocalizations of each participant in a small group encounter or interview as if each speaker were a separate entity, the kinesicist is faced with the fact that visual communication patterns involve contributions from more than one body as well as from a single body. The simple act of "Gregory's" holding a match to the tip of "Doris'" cigarette can, for example, be analyzed as an interaction with "Gregory" and "Doris" each supplying partials to the act as a whole. Less obvious multipersonal interactions include the synchronies described by William Condon and associates, the rhythms of interaction described by Elliot Chapple and associates, the postural mirrorings and groupings described by Albert Schéflen and associates, and the body motion indicators of mutual involvement described by Erving Goffman in several of his studies. Perhaps this division of the body motion communication labor should lead researchers to question their assumption that a person's speech can be thought of as if he alone produced it -- and the NHI team, when faced with this question, came to the answer that verbal as well as visual communication is inter- rather than intra-personal. The resulting transcription ought to have shown the audible and visible behaviors of "Gregory", "Doris", and "Billy" together on the same page, so that this interrelationship could be more easily seen, but limitations of space prohibited such a device. (Computer technology might be a solution to this practical problem). Kinesic analysis of interpersonal action patterns, then, led to the insight that speech is no less an interpersonal behavior.

Another conceptual difficulty raised by kinesic analysis is the strength of the assumption common to members of this culture that language carries the "real" or "main" message and body motion communication is no more than a commentary on that message. It is difficult not to see body motion as a kind of visual paralanguage. That assumption prevents the researcher from analysis of the body motion communication system in its own terms, just as the assumption made by early linguists that all languages had a grammar which was simply a variation on the grammar of classical Latin or Greek prevented them from analysis of non-Indo-European languages in their own terms. Many researchers have trouble assuming that there is a body motion system there to analyze due to the power of this assumption that body motion is mere commentary.

Early cultural training predisposes researchers to assume in addition that body motion communication consists largely of "gestures", motions which often can be named and which, like words, can be defined. Novelists are especially dependent on such "gestures" as head nods, hand shakes, turns, kneelings, blinks, smiles, waves, hand-to-heart placements, and eyebrow raises, for example, for their description of the contexts within which words are uttered. The body motion which cannot be described in terms of gestures or postures (e.g., "sitting", "standing", or "lying down") is usually thought of as either non-communicative or at best unimportant. Yet work by Starkey Duncan and associates has revealed the importance of such "background" motion as hand movements and head movements which were not part of the known gesture inventory for turn-taking and floor-apportionment, and Schefflen et al have described quasi-courtship and regulatory motions which served to facilitate the enactment of behavioral programs.

A final conceptual difficulty is the assumption that use of the methodology of descriptive linguistics for analysis of body motion communication implies a one-to-one correspondence between linguistic and kinesic units, with respect to size and shape of the units and location in time. Yet kinesic analysis of such materials as the "Doris" film showed units of both smaller and larger sizes than linguistic units, of different shapes, and with non-synchronous locations in time. The transcription that resulted from the NHI study did not look like this --

FIGURE VI-10: ASSUMED LINGUISTIC-KINESIC TRANSCRIPTION								
KINESIC UNITS	***** x y	@@@@ *** xyz	@ zzzz	##### x y z	\$ yy	\$ xxy	@ zzzzx	KINE- MORPHEME KINEME
LINGUISTIC UNITS	"he" /hiy/	"is" /iz/	"uh" /Λh/	"well" /wel/	"you""know" /yuw/ /now/	"uh" /Λh/		
TIME:	/...../...../...../...../...../...../...../...../...../							

with a kinesic unit for every corresponding linguistic unit, but rather like this:

FIGURE VI-11: DIAGRAM OF TYPICAL LINGUISTIC-KINESIC TRANSCRIPTION

KINESIC UNITS	***** xxxxxxxxxxx yyyyy	@@***** xxxxxxxxxxxxxxxxxxxxx yyyyyyyyyyyyyyyyyy zz	@ xxx	* yy	
LINGUISTIC UNITS	"he" /hiy/	"is" /iz/	"uh.." / h/	"well" /wel/	"you know" /yuw now/
TIME:	/...../...../...../...../...../...../...../...../...../				

The basic assumptions of kinesic research, then, are that there are body motion units, hierarchies of such units, and qualities or "para-" motion categories which can be described using the methodology of descriptive linguistics but without the assumption that body motion units, hierarchies, or qualities will be in one-to-one correspondence to linguistic units, hierarchies, and paralanguage.

The body motion categories will be described in approximately the same order as that used in the NHI transcription staff, presented below:

FIGURE VI-12: BODY MOTION LINES OF THE NHI
TRANSCRIPTION STAFF

LINE	CATEGORY	
	Body Base	Action signals:
52	position	Action modifiers
53	sex	75 unilateral-bilateral
54	age	76 specific-generalized
55	state of health	77 rhythmic-disrhythmic
56	body build	78 graceful-awkward
57	rhythm phase	79 fast-slow
58	territoriality	80 integrated-fragmented
59	mood	81 intertensive-intratensive
60	toxic state	82 self-possessed - self-contained
61	n-state	
	Body Set	Interaction Modifiers
62	status	83 mirror-parallel
63	gender	84 rhythmic-disrhythmic
64	age grade	85 open-closed
65	health image	
66	body image	Motion Markers
67	rhythm image	86 cue
68	territorial status	87 selection
69	mode	88 duration
70	toxic image	89 area
71	n-status	90 pronominal reference
	Paramotion: Motion characterizers	
	Motion Qualifiers	
72	intensity	
73	duration	
74	range	

(Continued on next page)

(FIGURE VI-12. CONTINUED)

Motion:

Microtranscription

91 head
 92 forehead
 93 brows
 94 eyes
 95 face/nose
 96 cheek
 97 mouth
 98 chin
 99 shoulder/neck
 100 shoulders
 101 trunk
 102 hips
 103 right arm
 104 hand/palm
 105 fingers
 106 left arm
 107 hand/palm
 108 fingers
 109 right leg
 110 foot
 111 left leg
 112 foot

Motion

Macrotranscription

113 head
 114 forehead
 115 brows
 116 eyes
 117 face/nose
 118 cheek
 119 mouth
 120 chin
 121 shoulder/neck
 122 shoulders
 123 trunk
 124 hips
 125 right arm
 126 hand/palm
 127 fingers
 128 left arm
 129 hand/palm
 130 fingers
 131 right leg
 132 foot
 133 left leg
 134 foot

Kinesic junctures

135 kinesic junctures

Kinemorphics

136 kinemorphics

Kinemorphokinics

137 kinemorphokinics

Kinemorphotactics

138 kinemorphotactics

Body base includes the categories on lines 52 to 61. It refers to the Gestalt or the configuration of a member of a particular social group. Just as the young of many species of birds and mammals learn to recognize conspecifics through the process of imprinting, human young learn to recognize not only biological conspecifics but also social co-members. We do not realize the power of this image of the human being until exposure to the varying contours and proportions of members of other groups makes us feel uneasy and leads to the experience of culture shock. The category of body base stems from the assumption that human bodies are not entirely genetically predetermined but rather grow to look like the bodies of those around them as muscles are trained and in turn influence growth patterns of bones. In some cultures, infants are manipulated and shaped by hand so that they will grow up to look like proper members of their groups. In our own culture, the process of "Rolfing", which involves a direct reshaping of musculature, is used by those who want their bodies to more closely match the symmetrical and classically proportioned ideal.

Body base, like voice base, is the socially patterned and biologically influenced ground against which the behavioral messages of body set can be seen as ^{figure}~~ground~~. A person can project the message "I am a member of the upper class" despite an actual lower-class origin, and vice versa, through body motion. This insight has been used by several authors in how-to-succeed books which give the advice: 'act as though you are successful and it will come true'. Similarly, a person can enact varying age and gender identifications. A sick person can give the impression of robust health, a small person can loom large, a sober person can appear drunk, and so on. The Sherlock Holmes stories

and the popular literature of espionage offer fictional accounts of such projections which are plausible because they occur daily in contexts where the discrepancies are unmarked. As Goffman has pointed out, the deliberate projection of behavioral messages which are misleading or contrary to fact will be perceived as sociopathic and evil or as quite commendable depending on the context or framework understandings shared by the participants. Poker players, for example, are expected to project misleading messages, while intimate relationships founder on the rocks of deception.

Body base is, however, no more or less natural than body set. Both are socially patterned. The difference is not one of truth and falsehood, or biology and sociology, or unlearned and learned. Body base and body set, like voice base and voice set, differ in terms of the relatively long-lived and the transitory, or the ground and figure, or the group baseline and the individual variation on that theme. In Bateson's terms, base and set are two different logical types. Set, composed of messages about base, is metacommunicational to base, composed of messages about social group identification. One cannot be reduced to or seen as identical with the other:

Body-base constitutes the basic image of other members of the social group which must be internalized by the group member in the socialization process. Body-set constitutes behavioral derivatives from the expectancy pattern of an associated member against which are measured the body qualities or situationally variant signals basic to any interactional sequence. Body-base, then, constitutes the zero line which any communicant must have internalized in order to recognize the special cross-referencing message carried by the body-set-signal complex.
(Birdwhistell 1970, 204)

The next categories are included under "paramotion", or modifications of the units of body motion with respect to qualities, tension, area, speed, and other characteristics. The "Motion Qualifiers" of intensity, duration, and range are parallel to the "Vocal Qualifiers" of intensity, extent, and pitch height to some degree, but the visual characteristics are not necessarily a calque on the vocal characteristics.

Intensity: which delineates the degree of muscular tension involved in the production of a kine or kinemorph. It has been possible to subdivide intensity into five relative degrees of tension: overtense, tense, N, lax, and overlax.

Range: width or extent of movement involved in performance of a given kine or kinemorph. Range is subdividable into narrow, limited, N, widened, and broad.

Velocity: the temporal length (relative to the range) involved in the production of a kine or kinemorph. Thus far we have been able to isolate only a three-degree scale for duration: stacatto, N, and allegro. (Birdwhistell 1970, 165)

These judgments are relative, so that a motion will appear more or less intense, cover a wider or narrower range, and seem faster or slower only when compared to other motions of the same kind in the rest of the corpus. A particular head nod, for example, may be modified in terms of tension (and may involve neck muscles as well), range (from 5 to 15 degrees for many Americans), and time (from "allegro" at 0.8 degrees motion in 1/24 second to "stacatto" at 2 or 3 degrees motion in 1/24 second) (Birdwhistell 1970, 164).

A second kind of modification of motion is the category of "Action Modifiers". These are qualities of the motion of an entire body. The dimensions of "unilateral-bilateral", "specific-generalized",

"rhythmic-disrhythmic", "graceful-awkward", "fast-slow", "integrated-fragmented", "intertensive-intratensive", and "self-possessed - self-contained" are explained in Birdwhistell 1970, 215-217.

These categories correspond roughly to the paralinguistic voice qualities (lines 21 through 28) in that the degree of control over the organs of articulation, which in this case are body parts, is described.

The "Interaction modifiers" refer to motion patterns shared or contributed to by two or more interactants. There is at this time no parallel category for linguistic behaviors, although in theory such descriptive terms as "mirror", "parallel", "rhythmic", and "disrhythmic" could be applied to spoken interaction patterns. One speaker may "unconsciously" mimic the speech patterns of his interlocutor, or the rapid speech of one may complement the stately speech of the other, for example. The three body motion interaction modifiers are:

Mirror-parallel: Mirror behavior is characterized by one or more actors acting in the mirror image of a central actor. Parallel behavior occurs when two or more actors move in parallel.

Rhythmic-disrhythmic: When the interactional behavior of two or more actors contains a clearly perceptible beat, introduced either in parallel or in series, such action is termed rhythmic. Disrhythmic interaction occurs when established rhythms are repeatedly interrupted.

Open-closed: An interaction is termed open when the behavior is characterized by searching the environment for other stimuli. To the extent that the participants are so highly interactive that they do not respond appropriately to other stimuli in the milieu, the interaction is closed. (Birdwhistell 1970, 218-219)

The "Motion markers" have no parallel in the linguistic or paralinguistic categories listed on the NHI transcription staff. These behaviors seem most closely related to speech and to some extent do function as commentary on the words uttered. "Cue" refers to turn-taking and floor-apportionment mechanisms signalled visually. "Selection" refers to behaviors accompanying spoken lists. "Area" refers to spatial locations mentioned in speech such as "here" and "there"; these markers may function as "shifters" in Jakobson's terms. "Pronominal reference" refers to behaviors marking the participants in either the narrated or the speech event and again may function as visual shifters. ("Shifters" are contextually-bound speech or possibly body motion items which refer the listener to a particular person, place, thing, or time. The words "I", "you", "there", "now", and "back" are shifters in that they are meaningful only when the participants and location in space and time of the speech event are known to the listener). Finally, "duration" as a motion marker refers to a shift in the motion qualifier of duration or velocity.

There are no kinesic categories corresponding to the paralinguistic categories of "laughing", "moaning", "yawning" or other vocal characterizers in this taxonomy. Conceivably such categories as "shivering", "shaking", and "bending down" could be created. In addition, motion of the upper body parts can take place while a person is walking, sitting himself down, or stretching. Such categories imply, however, that the body is performing a primary motion pattern similar to speech and the concomitant shaking or walking is a sort of interference or secondary behavior. Such coincidences occur in the "Doris" film: "Doris" continues to speak and move while performing wide-range and expansive stretches, position shifts, and

while walking, for example. The fact that such categories were not included in the NHI transcription staff implies a reluctance to divide motions into primary and secondary on an analogy with speech and laughter.

There are also no kinesic segregates listed on the staff parallel to vocal segregates. One reason for this might be the fact that segregates can only be determined after the linguistic and paralinguistic system has been described; i.e., vocal segregates can be identified as such only when analysis on the phonemic and morphemic and paralinguistic levels is adequate. The kinesic system may not at that point have been fully analyzed, so that body motion units could not be clearly assigned to a non-kinemorphemic category. Another possible reason is that no body motion segregates were found in this particular corpus. Finally, while speech proceeds sequentially in time, with sound following sound, body motion utilizes many body parts (the NHI transcription staff lists 22 body parts which are in turn subdivided), and motions may be simultaneous, overlapping, or sequential. Thus all visible parts of the body are involved in communication and there are no pauses to fill or nonlinguistic "sounds" inserted between linguistic sequences in their visual equivalents.

The next section of the kinesic transcription staff, lines 91 through 134, involves notation of "etic" and "emic" body motion units. Kinesic "microtranscription" is not strictly equivalent to linguistic phonetic transcription, nor can kinesic "macrotranscription" be equated with linguistic phonemics. "Micro-" and "macro-"transcription of body motion differ more in level of analysis than by an etic/emic contrast. The transcription system first reported by Birdwhistell in his Introduction to Kinesics (1952) was developed from American English data to a large

extent. The system has not yet been used by other researchers for data from other social groups in the same way as the International Phonetic Alphabet was tested and thus is likely to be ethnocentric, as Birdwhistell himself has noted. While the "microtranscription" system is not "etic" in the sense of cross-culturally applicable, then, it is "etic" in the sense of a preliminary descriptive frame used to record motions as faithfully as possible and without concern for the significance of any motion in terms of a kinesic system. "Macrotranscription" then is "emic" in both senses: it describes the emic units of a body motion system, and it represents an analysis of and abstraction from the initial data.

There has been no written report to date relating "microtranscription" notations to "macrotranscriptions" analogous to linguistic reports of the phonetic ranges covered by each phoneme class, and the notation shown in the NHI does not make these relationships clear. The researcher who wishes to learn kinesic transcription, once he has mastered linguistic methodology, must attempt to transcribe a stretch of behavior recorded on motion picture or videotape and then use the test procedures described above for establishing phonemes (see pages 209-211). He may well have to modify the traditional procedures, however, since body motion units are often difficult to produce, informants may have difficulty making judgements, and there are no dictionary definitions to serve as an anchor when establishing units. One solution is to start with a research document film and record all of the body motion behavior of all participants, and, using that as the corpus, compare all instances of behaviors which seem to be the same or similar in order to determine their components. The presence or absence of some of these components will be the difference

that makes a difference. This procedure has been described by Scheflen as "context analysis". Starting with relatively large behavioral units which he can recognize, the researcher performs both analysis of the units into their components and synthesis of the units into larger units in the film (Scheflen 1973), rather than starting with tiny phonetic segments and working up through phonemes and morphemes to sentences and discourse. The NHI team used the descriptive linguistic approach of working from smaller to larger units for the most part, and a context analysis of the same material has not yet been rigorously conducted. The two approaches are characterized in these quotations:

The secret is that we do not have to record or examine each bit. The pieces are organized into standard structural units, many of which are known through other research, recognizable at a glance and recordable with a stroke.
(Scheflen 1971, 408)

Only after analysis has revealed that the presence or absence of a given movement in a particular context systematically affects the interactional process do we assert that that movement has kinesic significance.
(Birdwhistell 1971, Chapter 3 of NHI)

Both approaches rest on an assumption that audible and visible behaviors are responded to as units on various levels of a hierarchy by participants in an interaction, and an observer can describe these units using either the sound-film alone or the film plus live informants, and starting either with small segments or with larger units.

Both the descriptive-linguistic "bottom up" and the context analysis "top down" approaches require a prolonged period of what the NHI team christened "soaking" -- repeated viewing and reviewing, listening and listening again, for dozens of times, of the same corpus. The NHI study is different from most other human communication research in this insistence on soaking. The approach is opposite to that of using an observation checklist to count occurrences of behaviors determined, either from the literature or from previous studies, to be significant. NHI research transcription also has little in common with stenography. The researcher must learn to perceive both the audible and visible behaviors in the corpus, with growing awareness, and to perceive signals on each of the 143 or more levels. This discipline of selective focus must be learned, and the procedure of soaking, combined with the questions that have to be asked and answered in order to use the transcription staff, provide opportunities for training.

Such learning is often painful. Implicit assumptions are suddenly discovered to be incorrect. Gestalt configurations perceived as wholes in daily life are suddenly seen in terms of component parts. At times, such as when film typically viewed at slow speeds is seen at the normal speed, the plethora of information bombarding the researcher can be overwhelming. But such learning allows the researcher to better perceive the behaviors recorded on the sound film, rather than simply using the data to confirm his a priori assumptions.

Another result of soaking is the ability to perceive behavior qua behavior, in effect erasing for a time the signature of the person who moved or spoke. The researcher may find himself saying that a head movement here is related to a hand movement there, rather than

using the formulae of daily life such as "she raises her hand and then he moves his head". Soaking enables the researcher to comprehend such motions or sounds as behavioral components of a system of behaviors first, and as the emission of a particular biological individual second.

The list of symbols for kinesic "macro-" and "micro-" transcription given in both the NHI and Birdwhistell (1970) is for these reasons far less important than the experience of soaking which teaches the researcher to see and the training in descriptive linguistic methodology which teaches him to analyze units in a disciplined way. The researcher who simply uses these lists of kinesic symbols on a particular film corpus without either viewing the film repeatedly until patterns appear or obtaining training will not be doing kinesic analysis. The reader is referred to Birdwhistell's publications, especially his 1970 book, and his 1952 Introduction to Kinesics, for his descriptions of the notation systems. A discussion of my own application of his transcription systems follows in Chapter Seven.

Lines 135 through 138 of the NHI transcription staff refer to "kinesic junctures", "kinemorphics", "kinemorphokinics", and "kinemorphotactics". The kinesic junctures are described in Birdwhistell (1970, 132-135). These include terminal junctures such as "kinesic double cross", "kinesic double bar", "kinesic single bar", and "kinesic triple cross" roughly analogous to the terminal contours discussed under suprasegmental phonemes above. Kinesic junctures also include internal junctures relating two stressed units separated in time, the "kinesic plus juncture" and the "hold juncture".

"Kinemorphics", "kinemorphokinics", and "kinemorphotactics" refer to the arrangements of kines within kinemorphs and are roughly analogous to syntactical relationships in language. The discussion in Birdwhistell (1970, 193-200) is relevant here. The reader should note that in his usage the term "kine" refers to what I have called the "kineme" :

A kine is an abstraction of that range of behavior produced by a member of a given group which, for another member of that same group, stands in perceptual contrast to a different range of such behavior. (Birdwhistell 1970, 193)

While the terms "kineme" and "kinemorpheme" were chosen in the expectation that body motion communication units analogous to phonemes and morphemes would be found, the analogy is not an exact one. Syntactical arrangements, for example, differ somewhat for kinesic units when compared to linguistic units:

For several years I have been hopeful that systematic research would reveal a strict hierarchical development in which kines could be derived from articulations, kinemorphs from complexes of kines, and that kinemorphs would be assembled by a grammar into what might be regarded as a kinesic sentence. While there are encouraging leads in the data, I am forced to report that so far I have been unable to discover such a grammar. Neither have I been able to isolate the simple hierarchy which I sought. (Birdwhistell 1970, 197-198.)

In my judgment, kinesic analysis, while justified in the use of descriptive linguistic methodology on the assumption that all human social communicative behavior is patterned into units and levels,

has not been developed to the extent that a complete description of the relationships among audible and visible communication behaviors for even one social group could be achieved. Kinesics is a young science, as linguistics was, and for those willing to undertake the necessary discipline there are vast opportunities for learning and discovery.

6. The larger linguistic-kinesic interpersonal system.

Description of the multimodal communication system requires correlation of audible and visible behaviors. The NHI team faced a technical problem which modern technology and videotape recording obviate, one of laboriously matching sounds with speech-motions using lip-reading and the film sound track as clues. Once such correlation is established, a larger problem remains. What sorts of relationships among speech and body motion should the researcher look for?

One solution to the problem is a relatively mechanical one. Since either film-frame numbers or digital time indications on videotape provide an "external" frame of reference with respect to time, simultaneities of audible and visible behaviors can easily be noted. If, for example, motions of hands, head, or feet can be seen to start or end precisely when phonation starts or stops, such simultaneity might be significant. William Condon and associates have explored this area of synchronies most fully, discovering two kinds of synchrony:

- (1) Self-synchrony. The organization of change of a speaker's body motion occurs synchronously with the articulated segmental organization of his speech. The body dances in time with speech... (Condon and Ogston 1967b, 225)

The organization of body motion change was found to co-occur systematically with speech at sub-phone, phone, syllable, word, phrase, and higher levels.
(Condon and Ogston 1967b, 227)

(2) Interactional synchrony. ... The father and son were found to share patterns of bodily changes in a precise harmony with the mother as she spoke. These changes occurred in both in relationship to the mother at exactly the same frame (1/24th of a second). All three sustained directions of change across syllable and word length segments of speech and changed together at the same 1/24th of a second that these segments ended, to again sustain directions of movement across the next ensuing segment.
(Condon and Ogston 1967 b, 229)

Note that the synchronies here are not between the starts and stops of audible and visible behavior but rather between the changes in direction of sound-producing and visual body motion. Synchrony was demonstrated even at the level of "bioelectric activity" measured by EEG readings taken during a conversation (Condon and Ogston 1967b, 234).

The fact of such synchrony allows exploration of dissynchronies. Condon and associates have found dissynchronies of self and of self with other to be indicative of autism, schizophrenia, and other disturbances. An examination of the "Doris" film in terms of synchronies and dissynchronies of "Gregory", "Doris", and "Billy" has not yet been performed, although some examples of precise coincidences were mentioned in the ninth chapter of the NHI report. I have included a tracing of a film-frame in which "Doris" and "Gregory" engage in a mutual change of direction of motion of their hands as an example of a visual synchrony (see page 303). Until the ground of personal and interpersonal synchronies of speech and body motion for all participants has been established, however, description of the figure of interesting dissynchronies cannot be given.

The NHI team also attempted operational definitions of the concepts of "personal", "inter-personal", and "extra-personal" communication patterns for the subjects recorded in the "Doris" film. The linguists, kinesicist, and psychiatrists worked independently and listed behavioral cues from different modalities. When the lists of cues were compared, it was discovered that the kinesicist noted shifts in body motion with units of an average size of two seconds or forty-eight frames duration, the linguists noted units of about three seconds duration on the average, and the psychiatrists noted units of about four seconds duration. They agreed that the film could be divided into sections in which speakers appeared to be addressing themselves, each other, or a wider audience according to behavioral cues, although this line of research was not further developed.

Another aspect of the interrelationships among speech and body motion is the possibility that behaviors involved in both speech and visual communication, while described separately according to the present methodology, may be integrated on the level of para-language-para-motion, as Birdwhistell suggests:

Present evidence is convincing that while canons of descriptive care must be adhered to, in the recordings of each modality, parakinesics and paralinguistics may be comprehended as a single system, paralanguage. And I have no reason to believe that paralanguage will be fully understood until the other channels of communication -- tactile, olfactory, gustatory, and proprioceptive -- are analyzed and comprehended. (Birdwhistell 1970, 109-110)

While the concept of separate senses of taste, touch, smell, sight, sound, and so on is familiar to us from the lay context, such separation may not be characteristic of human social communication. Perhaps an analysis of human social communication systems in their own terms would show not

not single-sense but multi-modal channels. The human organism does in fact perceive synesthetically to a large extent, integrating information received by many different kinds of receptors, and cases of purely visual or purely auditory perception are exceptions rather than the rule. A descriptive frame which attempts to separate visual from audible behaviors may be inadequate for this reason, and a communication theory and methodology which assumes such separation as a fact of human communication may result in drastically biased data. As Pike pointed out:

Verbal and nonverbal activity is a unified whole, and theory and methodology should be organized or created to treat it as such.
(Pike 1967, 26)

Rather than abandoning the work of the past, I would suggest the addition of new methods of synesthetic analysis where possible. Perhaps the simple addition of a set of lines to the NHI transcription staff for "etic" and "emic" audio-visual units and levels would suffice.

The NHI team made theoretical and methodological advances in this direction. They described human social communication as a multi-modal system within which linguistic and kinesic behaviors could be methodologically separated but which must be theoretically comprehended as "infracommunicational". Thus a communication system is similar to a semiotic system such as a language which can be represented by the dots and dashes of Morse code, the electronic pulses of telephone signals, the bits of computer codes, the alphabet, handwritten messages, printed messages, whispered messages, and shouted messages -- but which is not equivalent to and cannot be reduced to any one of those representations or manifestations. The communication system of a human group, then, may

may be manifested by various kinds of visible and audible and in other ways sensible behaviors, but it cannot be seen as equivalent to or reducible to any one of those manifestations or representations. Description of linguistic units and levels and of kinesic units and levels need not imply that a separate system of audible or visible behavior exists in fact. This assumption allows the researcher to look for audio-visual units, both personal and interpersonal.¹

7. Analysis of behavior in terms of diagnosis of pathology.

The NHI study was conducted within the context of psychiatric research and also within the context of communication research. Both the psychiatrists and the communication researchers involved were interested in the problem of description of the behaviors which therapists used as cues to pathology. Gregory Bateson was especially interested in the genesis of pathological communication systems in early mother-child interactions. Frieda Fromm-Reichmann and Henry Brosin were particularly interested in making explicit the signs utilized in diagnosis and treatment.

The team therefore developed a methodology for the description of behavioral cues to pathology. Since no absolute standards for "normality" and "pathology" were available, the team used the behaviors recorded in the corpus to provide both patterns of interaction and unpredictable behaviors which might be "symptomatic". The pattern of behavior of each participant was used as the "baseline" against which such unusual behaviors stood out. The criterion for "unusualness" was not either an a priori conception of what kinds of behaviors are usual or unusual or the number of times of occurrence. A behavior was considered unusual

1. The reader is recommended to find copies of the film "Context Analysis" by Andrew Ferber (Bronx State Hospital) et al; produced at Eastern Penna. Psychiatric Institute in Philadelphia for excellent examples.

with respect to its context of surrounding behaviors:

It is not relative frequency or infrequency alone which constitutes the measure of unusualness, but rather, and more importantly, the fact that some items appear as 'breaks' in a previously established pattern.
(McQuown 1971, Chapter 9, of the NHI)

"Gregory", "Doris", and "Billy" were described in terms of both baseline patterns of speech and body motion and breaks in the patterns. "Doris", since she was in therapy at the time, had been recruited for the project through her therapist, and expected to use the sound film records of her behavior as a means of personal development, was the focus of the team's interest. The danger of such description of an individual's behaviors as symptomatic of disorder, however, is the ease with which context can be ignored. "Doris'" behaviors occurred in the context of a filmed and recorded interview conducted by a communication researcher and anthropologist from Britain (although by that time he had become an American citizen, he spoke and moved more like a member of the British than of the American culture) on a stressful day. Films and tape recordings of other events involving "Doris" at mealtime, at a party, and with her therapist may or may not reveal the behaviors considered symptomatic by those who analyzed the "Doris" film alone; a comparison study was not conducted due to time and other restraints.

This problem of symptomaticity of behaviors has not yet been solved. Are behaviors which are performed only in the context of the therapy session or psychiatric interview truly symptomatic? Is it necessary to record the subject in a range of social situations, both formal and informal, and to find the same sort of behaviors performed

in different contexts before they can be labeled symptomatic? If the baseline behavior patterns are different when the subject participates in different social events, then will the list of symptomatic behaviors be different for each context? As McQuown pointed out, this issue of unusualness rests on the larger issue of social baselines against which individual behaviors must be described. If "Boris" performed behavior patterns representative of her social group of origin, then the researcher who attributes a particular behavior pattern to her as an individual and then describes some of these behaviors as symptomatic will commit the error of confusing the logical types of the social and the individual. Until social patterns have been described, any attribution of behaviors to the individual must be tentative and cautious.

8. Summary: the NHI methodology.

The methodology described above involves several steps. First, a corpus is obtained. Behaviors recorded on a research document film or its videotape equivalent are transcribed with "etic" notation for audible and visible behaviors. The corpus is then analyzed into "emic" units and levels. According to this particular approach, both digital segments and analog modifications can be found at most levels of analysis. Audible and visible behaviors are methodologically separated, although the theory assumes an integrated multimodal system of human social communication. When possible, audio-visual units and levels are also described. Both personal and inter-personal patterns of behavior are analyzed. Both context analysis of behavior programs and descriptive linguistic analysis of units and hierarchies may be performed. Behaviors which appear unusual against the background of baseline patterns may be noted for diagnostic purposes.

The reader should note that the result of such a study is only a first step. Just as a linguist needs to test his analysis on more than one native speaker representative of more than one social grouping, so the human social communication researcher must search for comparisons. The data reported in the NHI study may be representative of a tiny subgroup within the larger group of speakers of American English and in addition, since the data used were recorded twenty years ago, the information may be somewhat obsolete. As long as the NHI study stands alone, without comparison, the worth of its data and conclusions cannot be assessed.¹

While my own study ought ideally to have presented such a comparison, I was unable in the time available to both master the theory and methodology and singlehandedly perform the description and analysis of new data. I hope to obtain some data for comparison during my service in the Peace Corps in Thailand. The results of the study I was able to conduct are presented in Chapter Seven following.

1. I do not mean to imply that the natural history method or theory has not been used outside of the NHI study itself. Drs. Albert Scheflen, William Condon, Adam Kendon, Starkey Duncan, and a number of students who took Dr. Norman McQuown's class in "Interview Analysis" at the University of Chicago have all produced excellent studies using this approach. While none of them used the full transcription staff, and the studies concentrated on different levels in the hierarchy, these studies show that an enormous amount of information can be obtained through this approach and the necessary dedication and patience.

CHAPTER SIX

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CHAPTER SEVEN

THE NATURAL HISTORICAL APPROACH TO COMMUNICATION RESEARCH:

KINDS OF QUESTION ASKED AND DATA GENERATED

Examples of the sorts of problems that can be studied using the methodology of the NHI will be presented in this chapter. These problems are not discussed exhaustively, nor are all of the various kinds of problems which arise during such a study mentioned. Visuals consisting primarily of tracings from individual frames of the "Doris" film will be used since most readers will not have access to the film or an analysis projector. A brief example of linguistic-kinesic transcription follows, with the kinesic "microtranscription" system I developed on the basis of the one created by Birdwhistell.

1. The "pointing" series: film tracings.

In this series of tracings of film frames made with the projector at a constant distance from the paper and later reduced, we see several examples of what appears to be the "same" motion of "pointing". All of these hand/arm motions share the common features of motion away from and then toward the mover's torso in the horizontal plane. They vary respect to hands used, configurations of fingers, directions and speeds of motions, the angles of upper and lower arms and hands, the positions of other body parts, and the co-occurring verbal messages. If all such occurrences were simply noted as "pointings" without further analysis, the researcher would commit the error of assuming without proof that visual similarity indicates functional identity of the behavior within the behavioral system. Using the natural history approach, however,

the researcher would ask the following questions:

- Is this motion a unit?
 - Does this motion provide an environment within which smaller units vary?
 - Do other units contrast on this level?
 - Are smaller units components of this unit?
 - Is this unit a component of a larger unit?
- What are the linguistic and kinesic contexts within which this motion occurs?
- When does variation in the motion lead to the response of "different"?
- Is there a better way to divide this motion complex into units?

and perform the tests used in determining phonemes as much as possible (complementary distribution, pattern congruity, and etic similarity).

The decision that some or all of the motions presented here as single-frame tracings belong to an emic unit of "pointing" is thus the result of analysis and cannot be made on the basis of lay knowledge of gestures or intuition.

FIGURE VI-1: Frame 001615

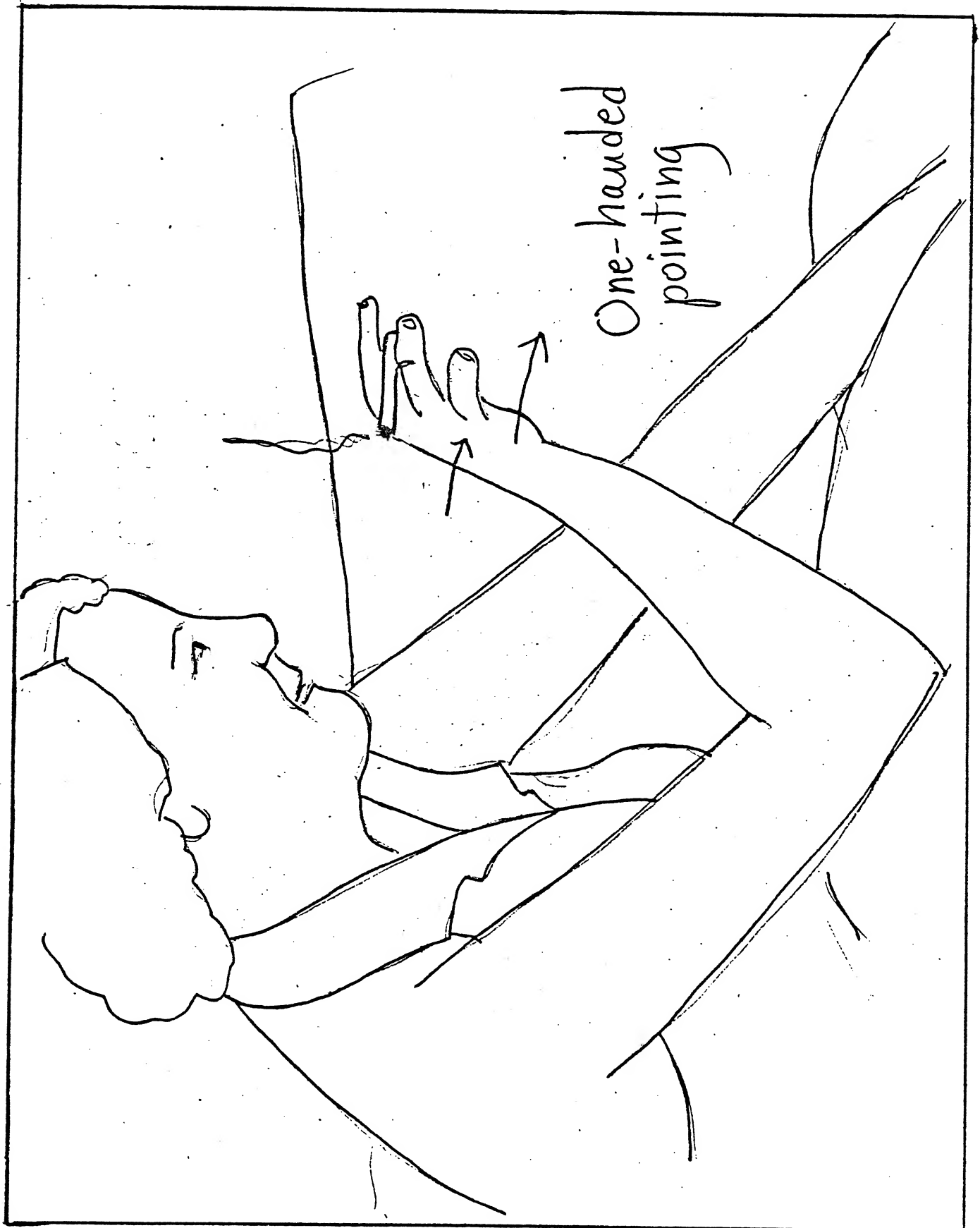




FIGURE VI-3: FRAME 007926

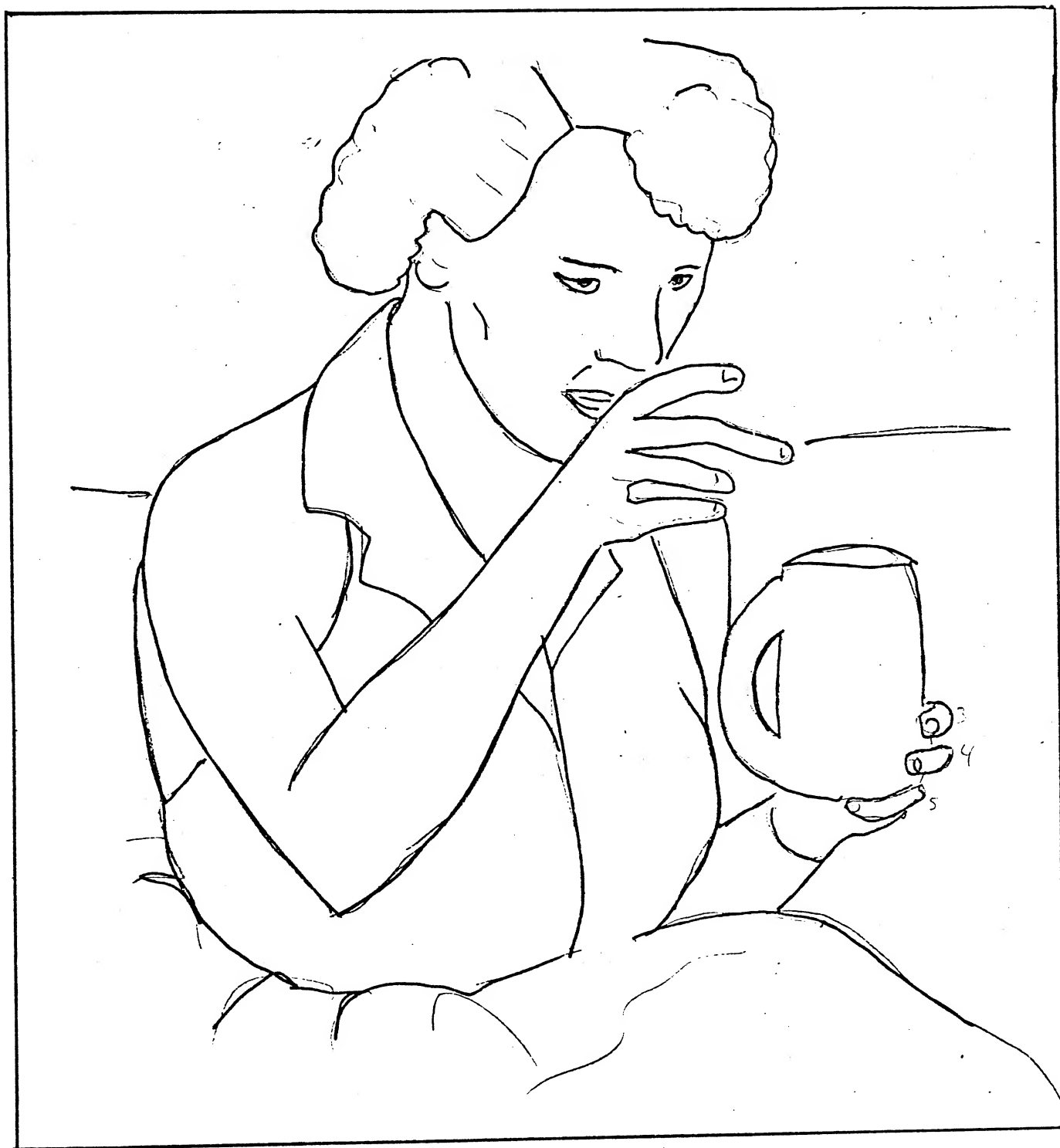
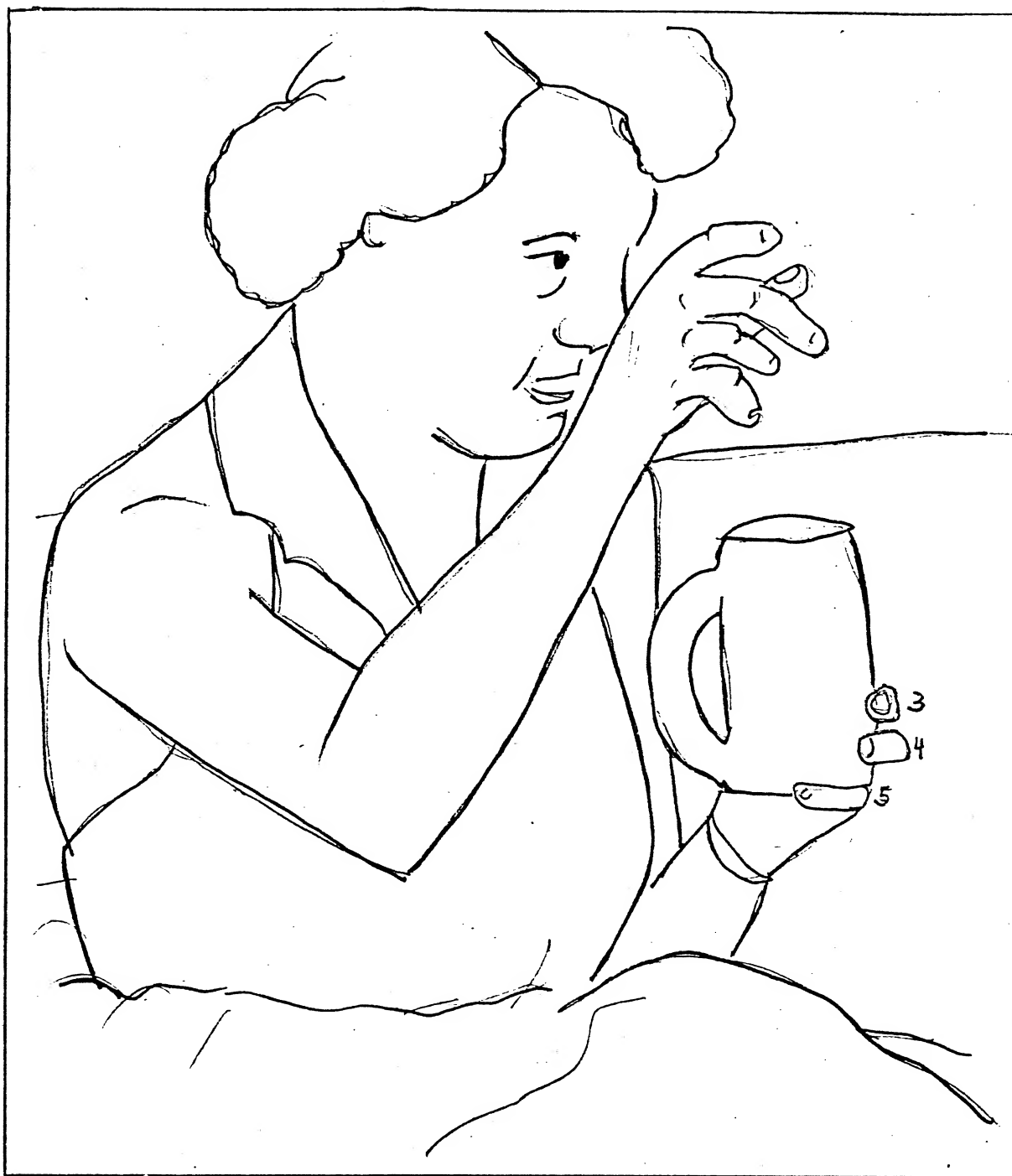


FIGURE VI-4: FRAME 007941



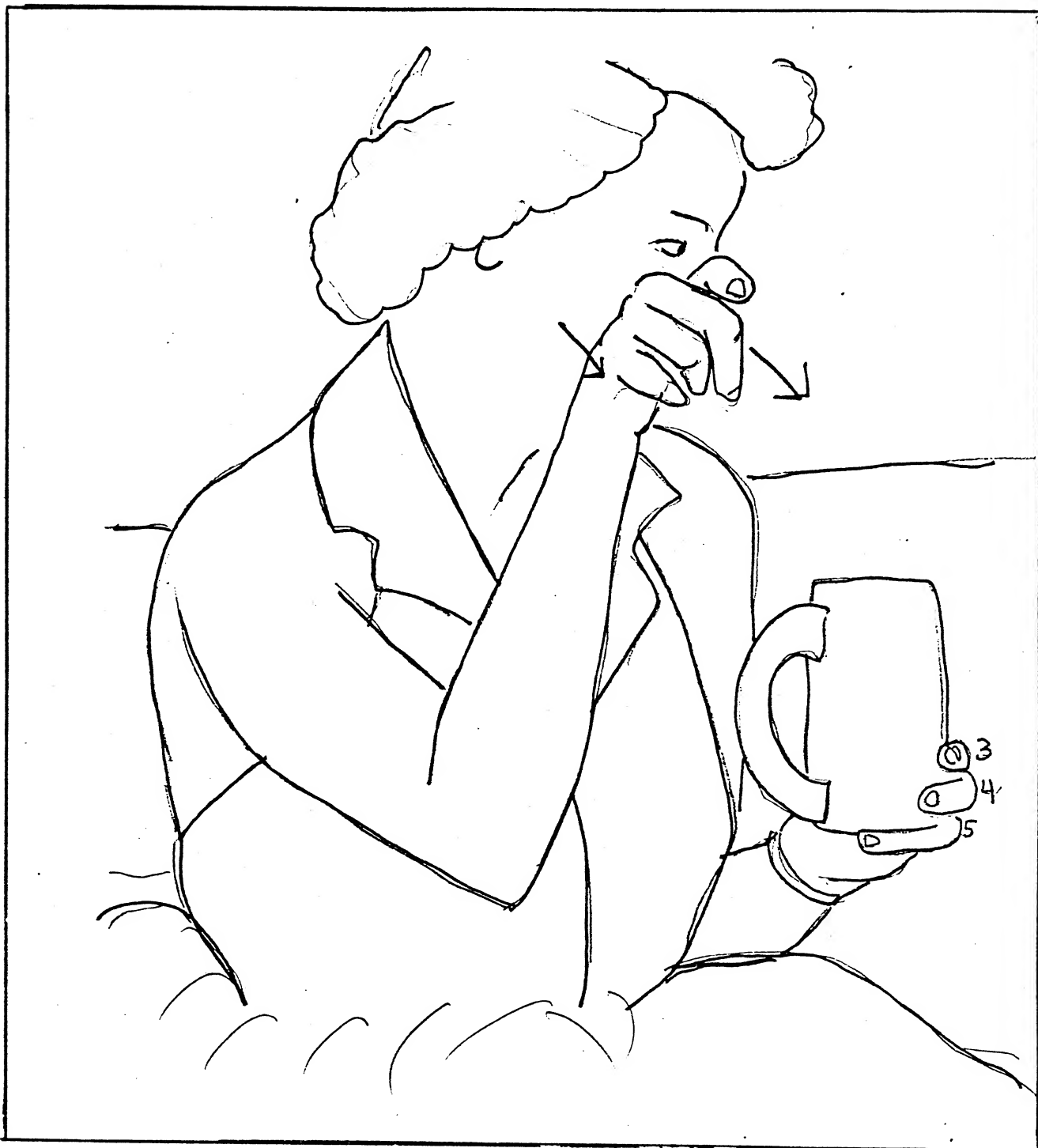


FIGURE VI-5: FRAME 007954

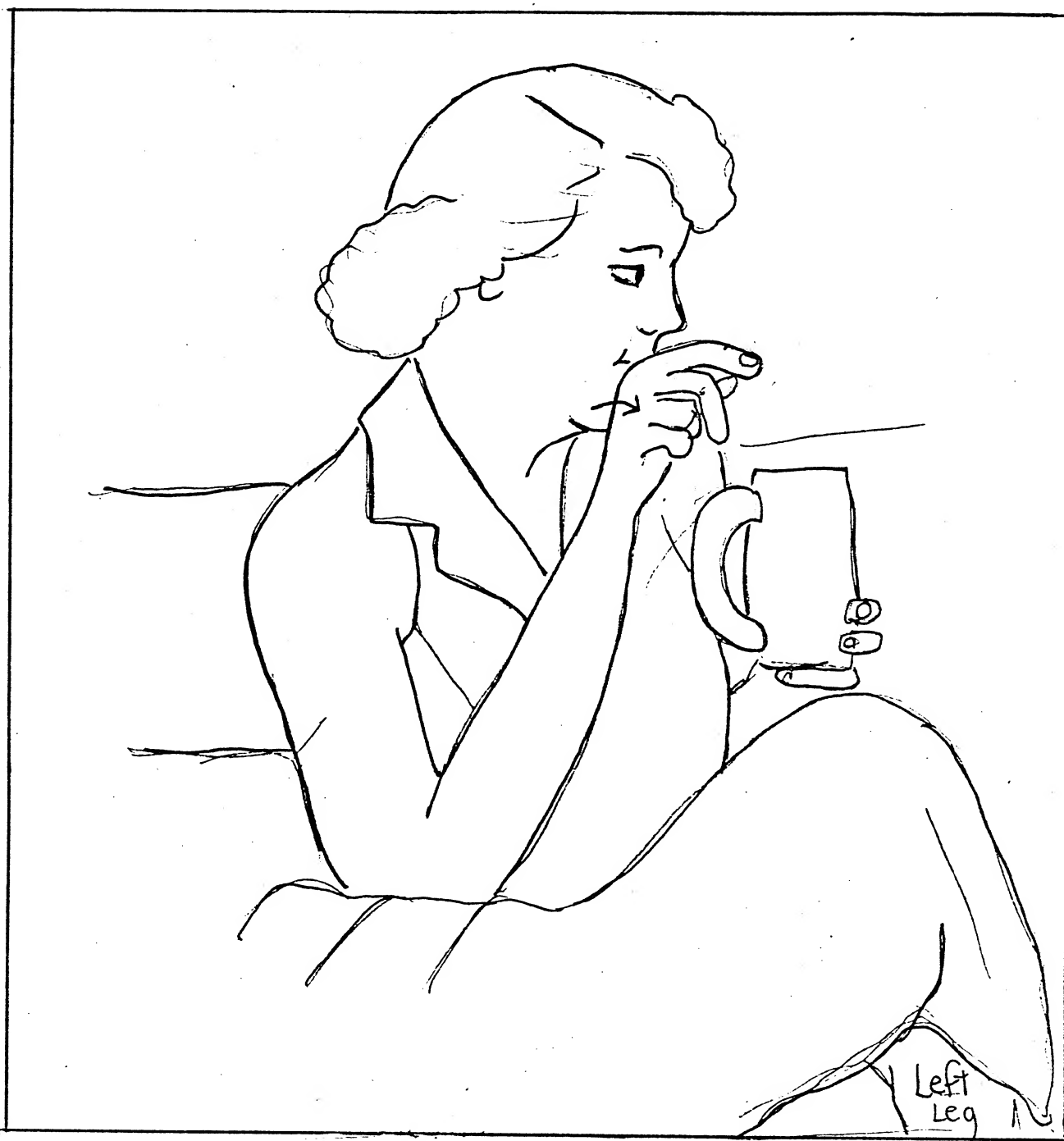


FIGURE VI-6: FRAME 007989

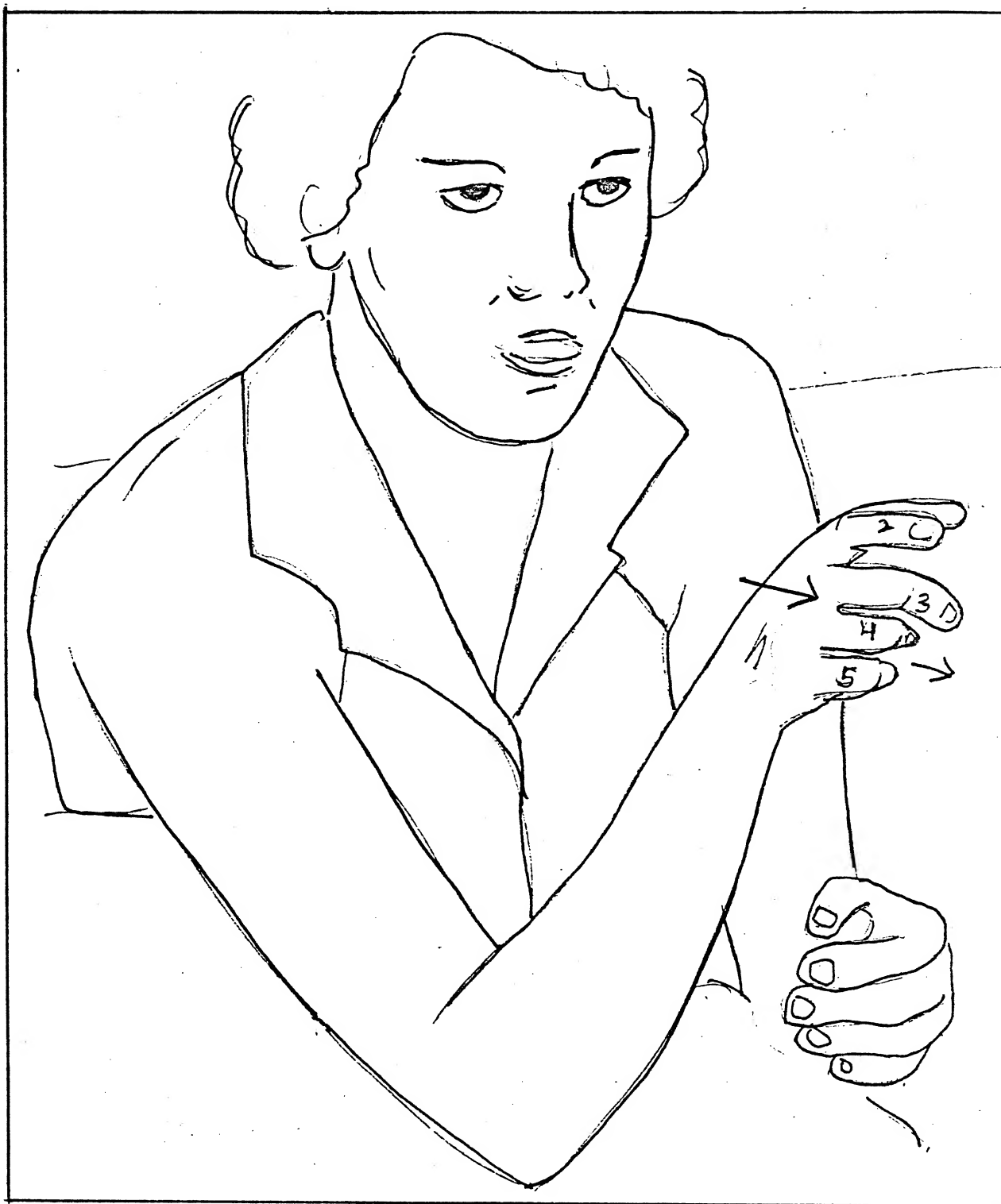


FIGURE VI-7: FRAME 0011087

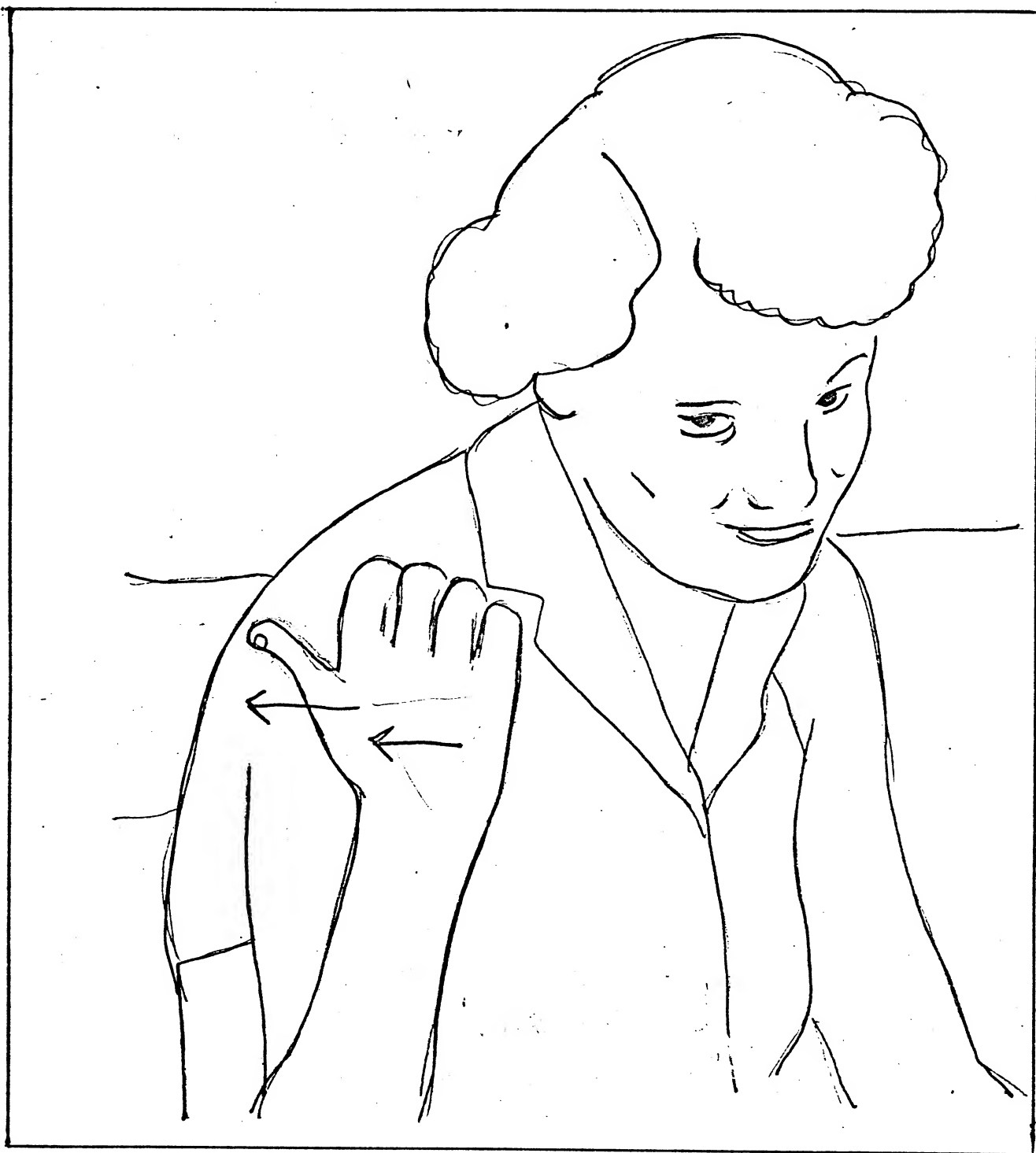


FIGURE VI-8: FRAME 0011231

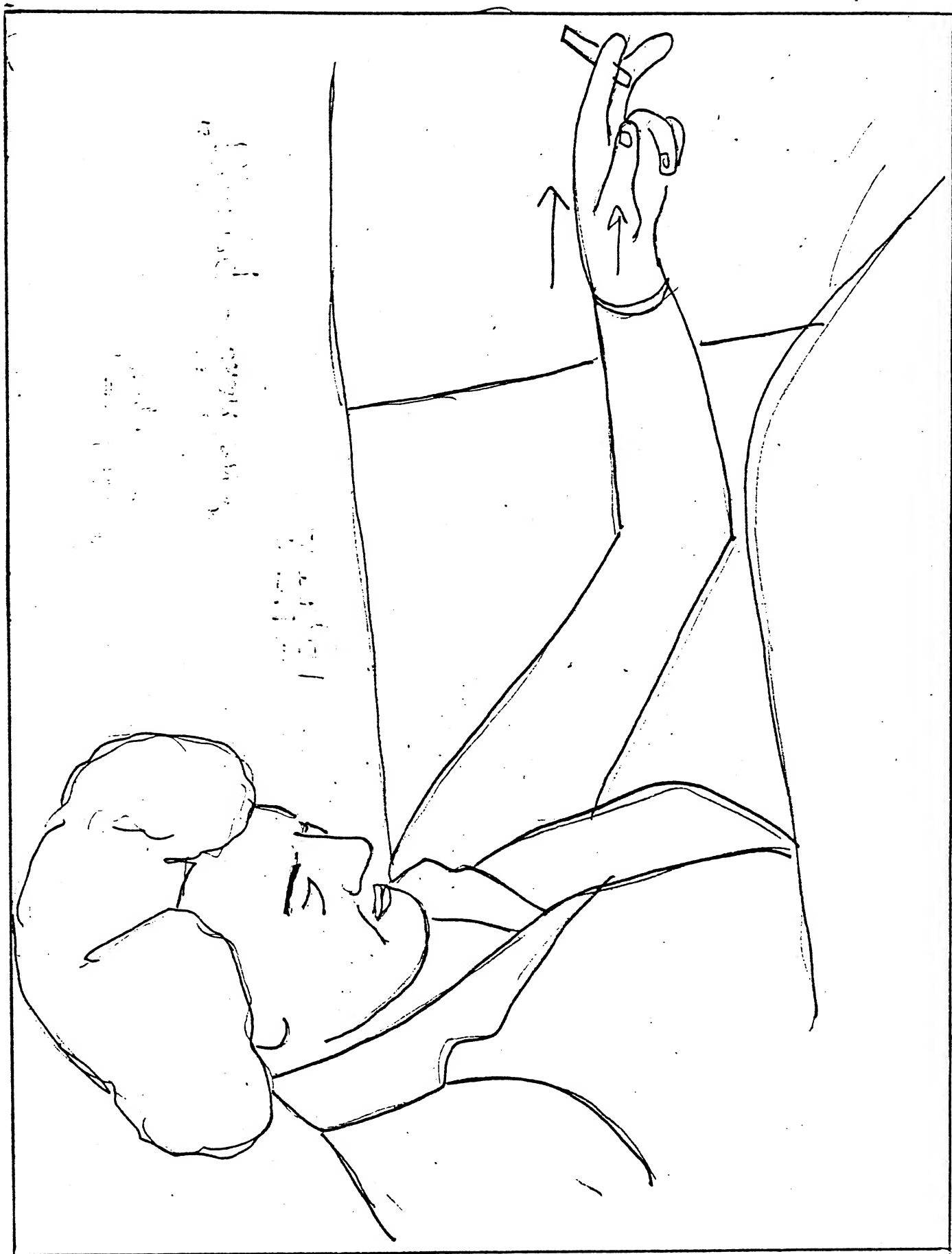
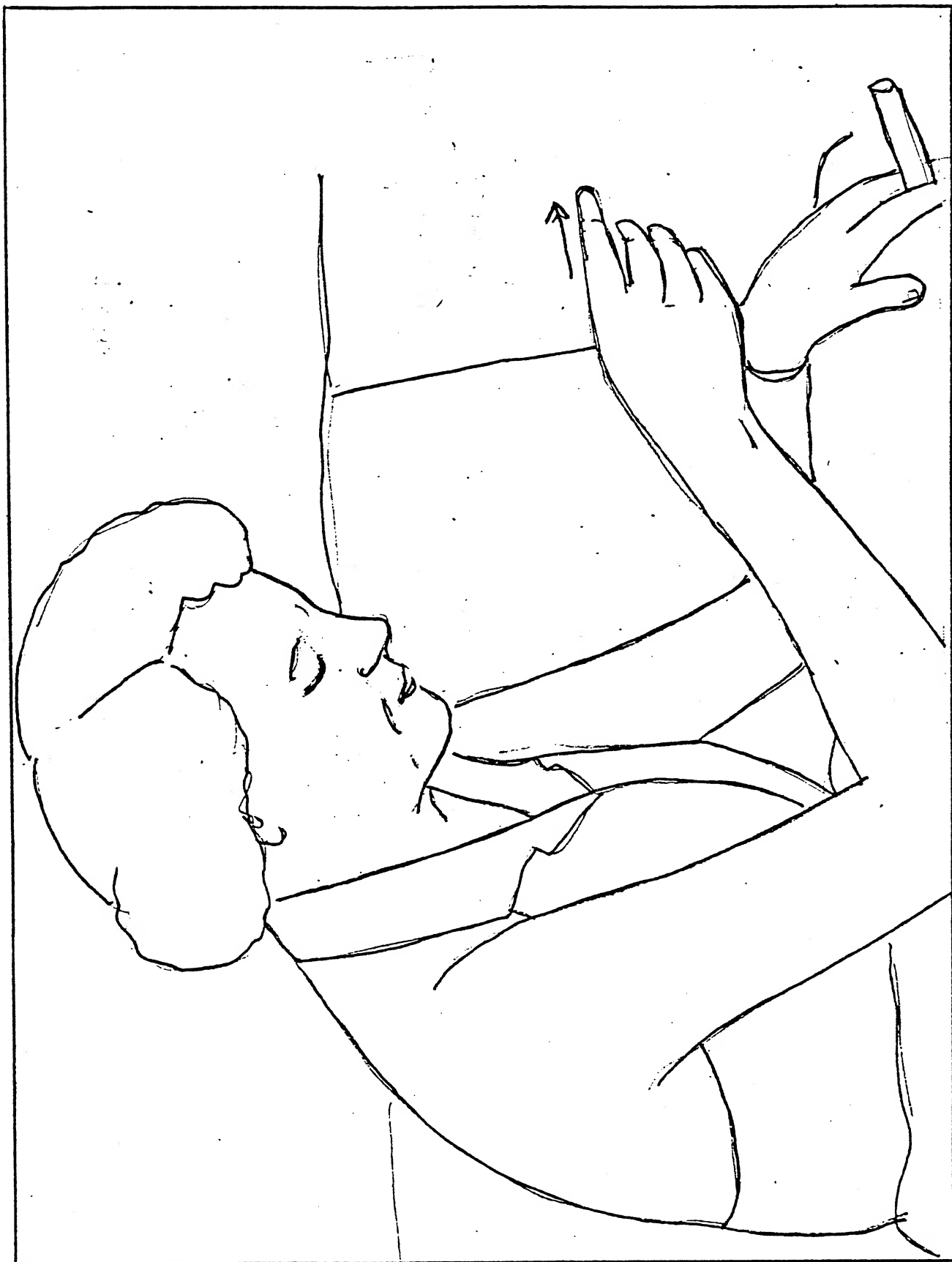


FIGURE VL-9: FRAME 0013472



2. "Billy's" hand positions.

This series of film-frame tracings shows, in reduced scale, the various positions assumed by "Billy's" hands and fingers from frames 01 through 0610. These position drawings fail to capture the motions and changes. Such finger play could easily be dismissed as mere "fiddling" or "fidgeting" normal in a four-and-a-half year old boy who understands that some people want to take pictures of him so he is supposed to stay still. The finger play could also be assumed to be purely random. Yet, given the NHI assumption that all behaviors are meaningful until proved meaningless, the following questions can be asked about "Billy's" finger play:

- Do specific motions of particular fingers have any relationship to words spoken by "Doris" or "Gregory"?
- Do the fingers change position in synchrony with other kinesic behaviors performed by either of three people in this scene?
- Can units of finger motion be found (using the tests mentioned on page 272)?
- Can a pattern of arrangements of these finger motions be found?

While "Billy" is actually holding a toy gun with one or more fingers during most of this finger play, he engages all ten fingers in activity. Several "motifs" or tentative patterns can be seen. He rubs the finger of one hand along the finger of another, for example, with a sliding motion, as in frames 0016-0019 and 1580-1584. The visual pattern seen in frame 0037 is seen again, with variations, in frames 0200, 0291, 0350, and 0540 and others. Another motif is seen in 0125, 0170, 0274, 0392, and 0610, in which a finger of one hand is not simply touched or surrounded by fingers of another hand but rather is clasped. Clasping of several

fingers of one hand by fingers of the other, as in 0385 and 0492, may be a variation of this motif. Another motif involves the touching of the fingertip of a finger of one hand with that of a different finger on the other, as in frames 0056, 0210, and 0415. Another motif is the turning of the palm of one hand toward the ceiling.

These motifs are merely tentative starting points and guesses about units rather than proven units. They are intended to alert the researcher to patterned behavior which is not named in the traditional gesture repertoire but which cannot be assumed to be unimportant. "Doris" also holds her fingers and hands in several "positions"; see for example the various positions assumed by the fingers of the hand holding her mug in the sketches included in this chapter in other sections. She also performs a palm-upward motif reminiscent of "Billy's". "Gregory" also seems to sustain a limited set of finger positions. If the criterion of total accountability is to be met, even such small and generally ignored behaviors must be recorded and analyzed.

BILLY: Hand Positions

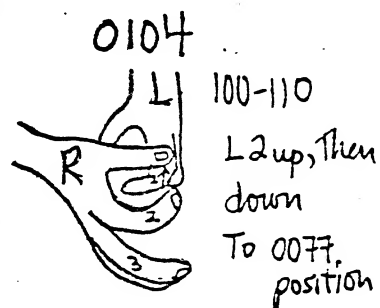
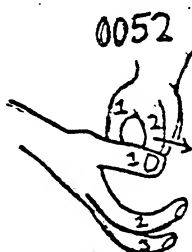
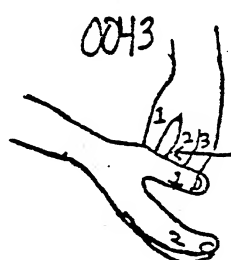
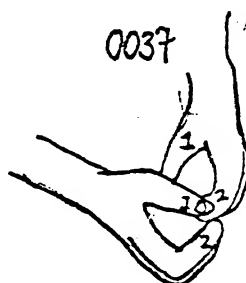
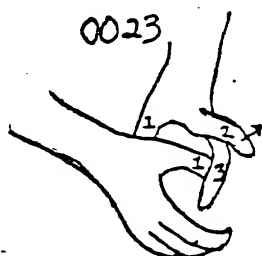
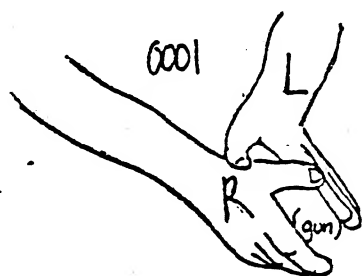


FIGURE VI-12: "Billy" hand positions

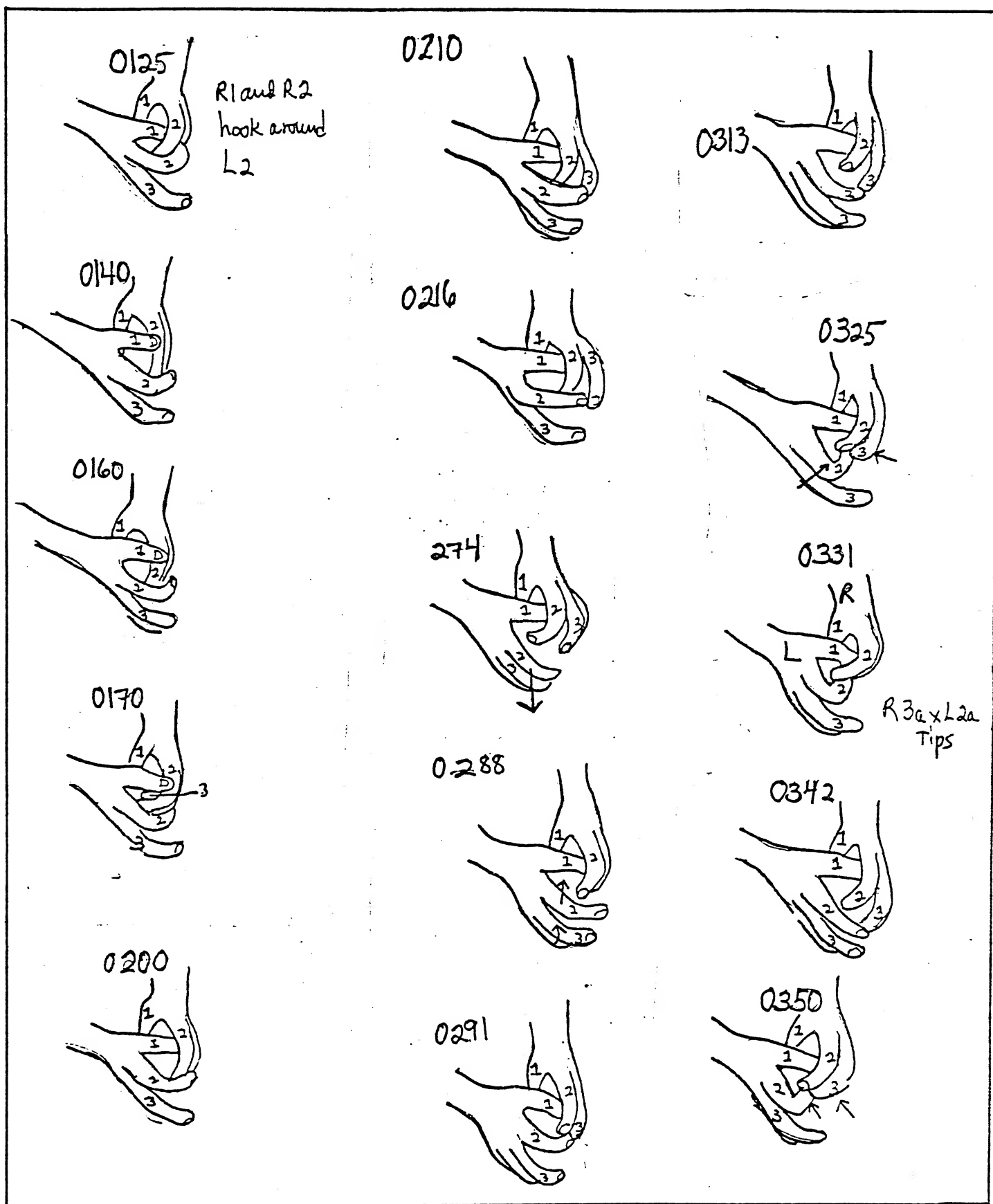
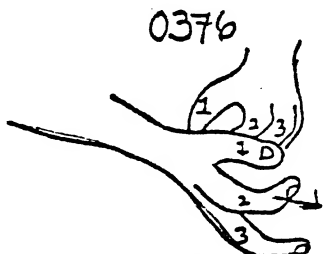
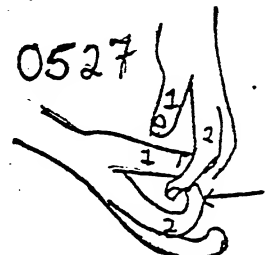
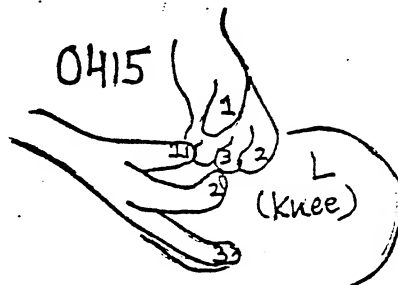
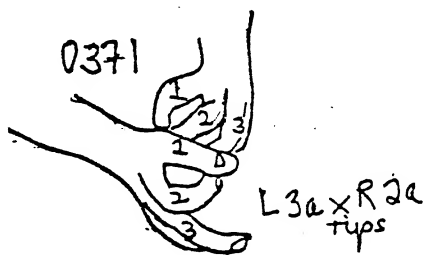
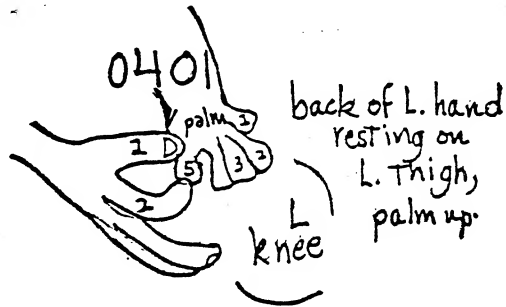
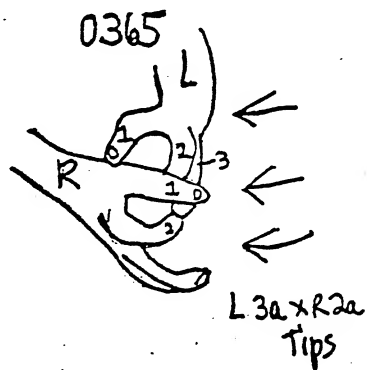


FIGURE VI-13: "Billy" hand positions

100



! 0580-4



3. Awareness of the camera.

Tracings of three film-frames are included here which seem to show each of the three subjects at times when their eyes are directed toward the camera and/or cameraman. While "Doris" and "Gregory" seem to shoot swift glances in that direction, "Billy" apparently keeps his eyes on the camera during a long stretch as he walks to our left and the camera pans to follow him.

The audio tape record also provides information about the participants' awareness of the camera and tape. Audio tape recording was started before the camera and lights were set up, and conversations recorded at that time include a search for hooks in the ceiling from which to suspend equipment, and the cameraman instructing "Billy" to look at the "red meter" on what I assume to be his light meter. In addition, the cameraman changed the hundred-foot rolls of film fairly frequently and I assume that he could be seen to zoom in and out by the participants with either direct or peripheral vision.

I have observed the filming and recording of a committee meeting by a cameraman who walked about the room with his camera on his shoulder. The participants appeared not to notice him, and made remarks during the time of recording about their own lack of awareness. Yet the cameraman, especially when he moved about, must have been perceptible by peripheral vision to some of the subjects some of the time. Had they carefully refrained from even glancing toward the camera, then, the lack of clear evidence of attention to the camera would still have to be weighed in the balance with the information received on some level by peripheral vision and hearing.

FIGURE VI-14: Looking Toward Camera

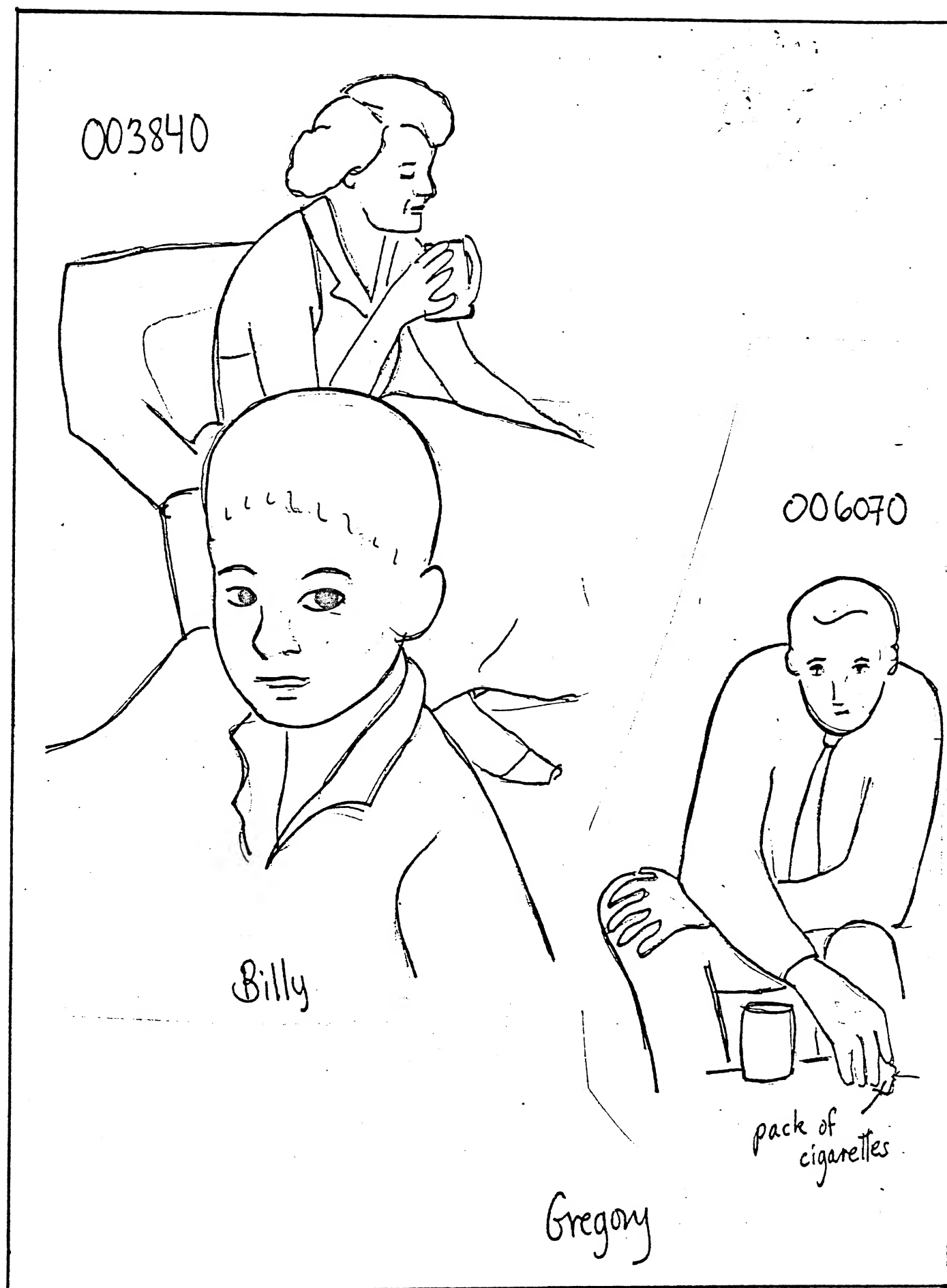


FIGURE VI-15: Looking Toward Camera



4. Interpersonal relationships.

This series of film-frame tracings shows an interaction between "Doris" and her son "Billy". "Billy" seems to initiate his helpful activity of giving his mother a pillow to put behind her back and increase her comfort with his words, "Here, Mom, do you want one of these?" and his walking toward her, pillow in hand. "Doris" tells him "Oh, thanks, honey" and immediately resumes her flow of talk. At the same time she uses her right hand to effectively block her son's placement of the pillow behind her. They seem to have a brief and silent struggle about the pillow. "Billy" surrenders, letting go of the pillow and turning away. "Doris", still holding the pillow in her right hand, rotates her torso toward her left and moves the pillow to the front of her body. The cameraman has been steadily zooming in to a close-up. "Billy", instead of simply walking away, continues his turn until it reaches 360 degrees, leading with his eyes, while "Doris" holding the pillow with both hands continues to move it around her body from her front to her left side. Thus her back is toward "Billy". She places the pillow on the couch behind her back as her son watches her. Then, as he walks away to our left, she rotates her torso toward her right, returning to a position of arms resting on thighs, and aims a "disgruntled" facial expression toward her son.

If this interreaction is typical in the life of mother and son, then it can be inferred that the child's attempts to help his mother are usually met with rejection and puzzlement. But is this necessarily the only interpretation of what happened? In another interpretation, "Billy" can be perceived as demanding attention from his mother when

she is involved with another, male adult. "Doris" seems to hold this view, since she describes her son as interrupting her when she is visiting with friends or just talking with her husband. Or, in another interpretation, the interaction may indicate a symbiotic relationship in which both mother and child frustrate each other. In another possible interpretation, the attempt may be seen as a success; the pillow, after all, did end up behind "Doris'" back where "Billy" intended it to be.

Any interpretation, no matter how obvious or obscure, is tentative and must be checked against the larger patterns of mother-child behaviors recorded in this corpus and other records. This gift behavior is only one of several instances of giving seen in the "Doris" film: "Doris" gave "Gregory" a beer (off camera but on tape); "Gregory" gave "Doris" a light for her cigarette; and all three people gave the cameraman aid (off-camera) in locating hooks in the ceiling. "Doris" also gives "Billy" help in fixing his toy airplane. It is one of several mother-child interactions. It is probably not the only "misunderstanding". And this exchange cannot be described as pathological or normal until baselines of mother-child interactions have been described for the social group.

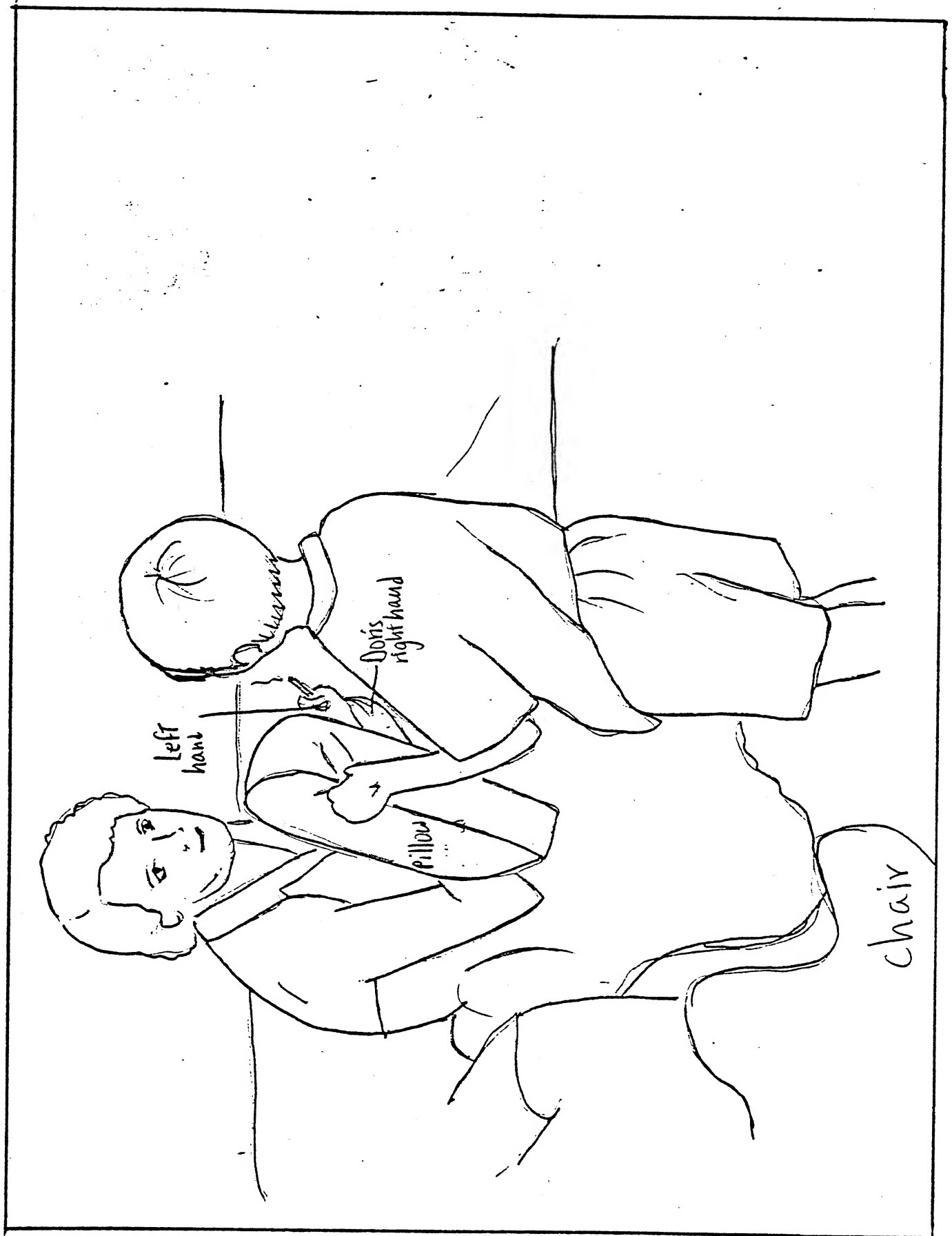
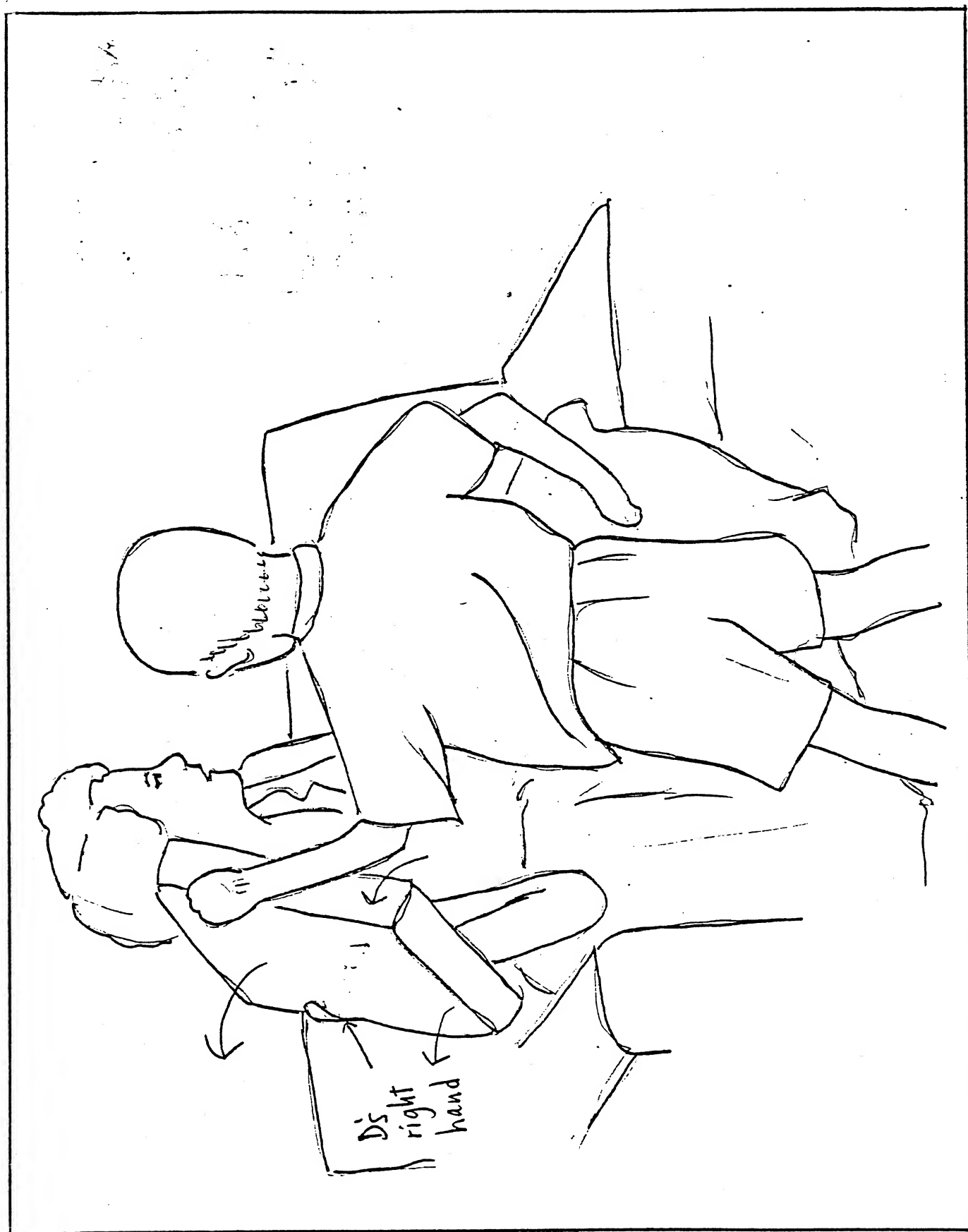
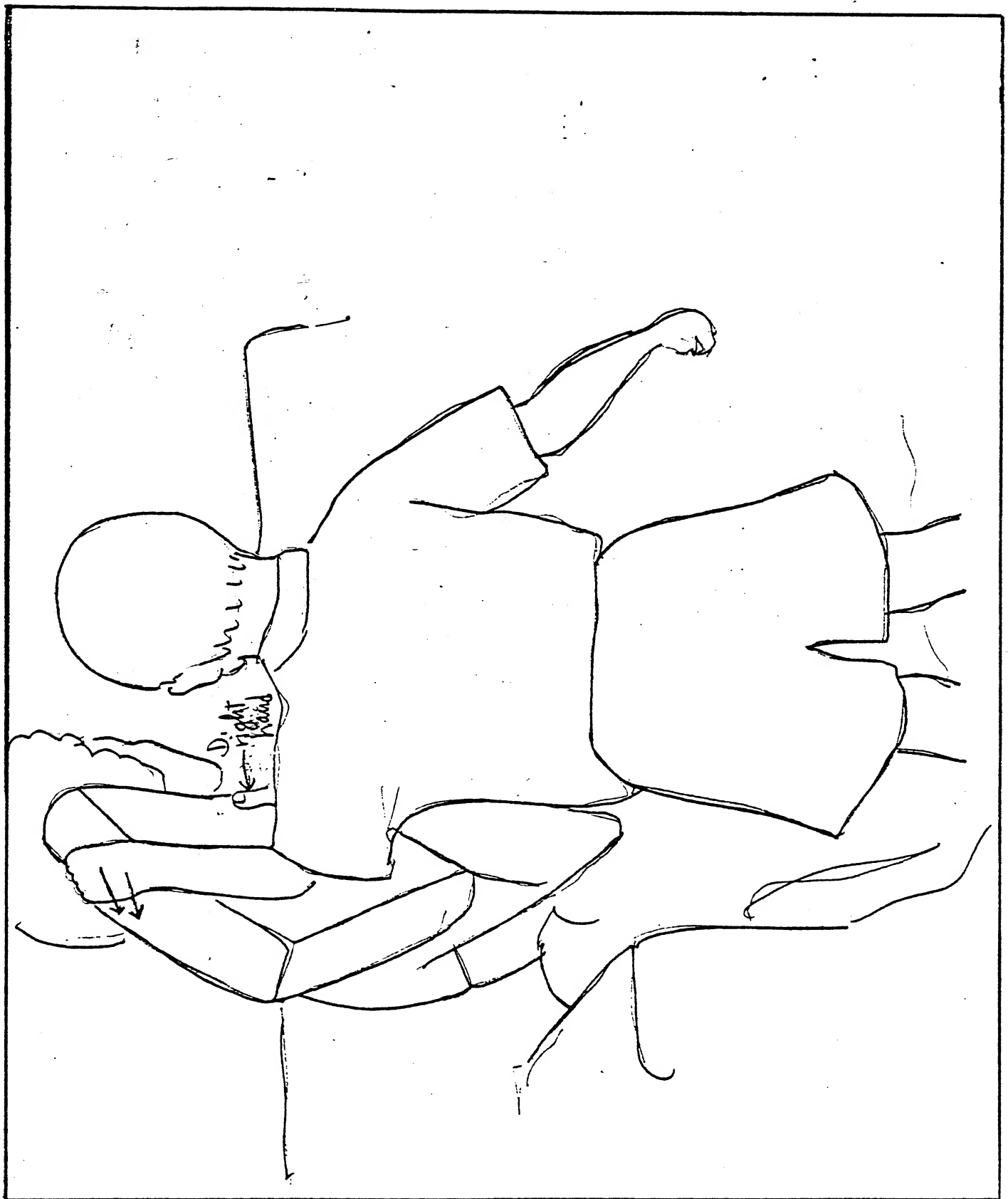


FIGURE VI-17: Frame 001718





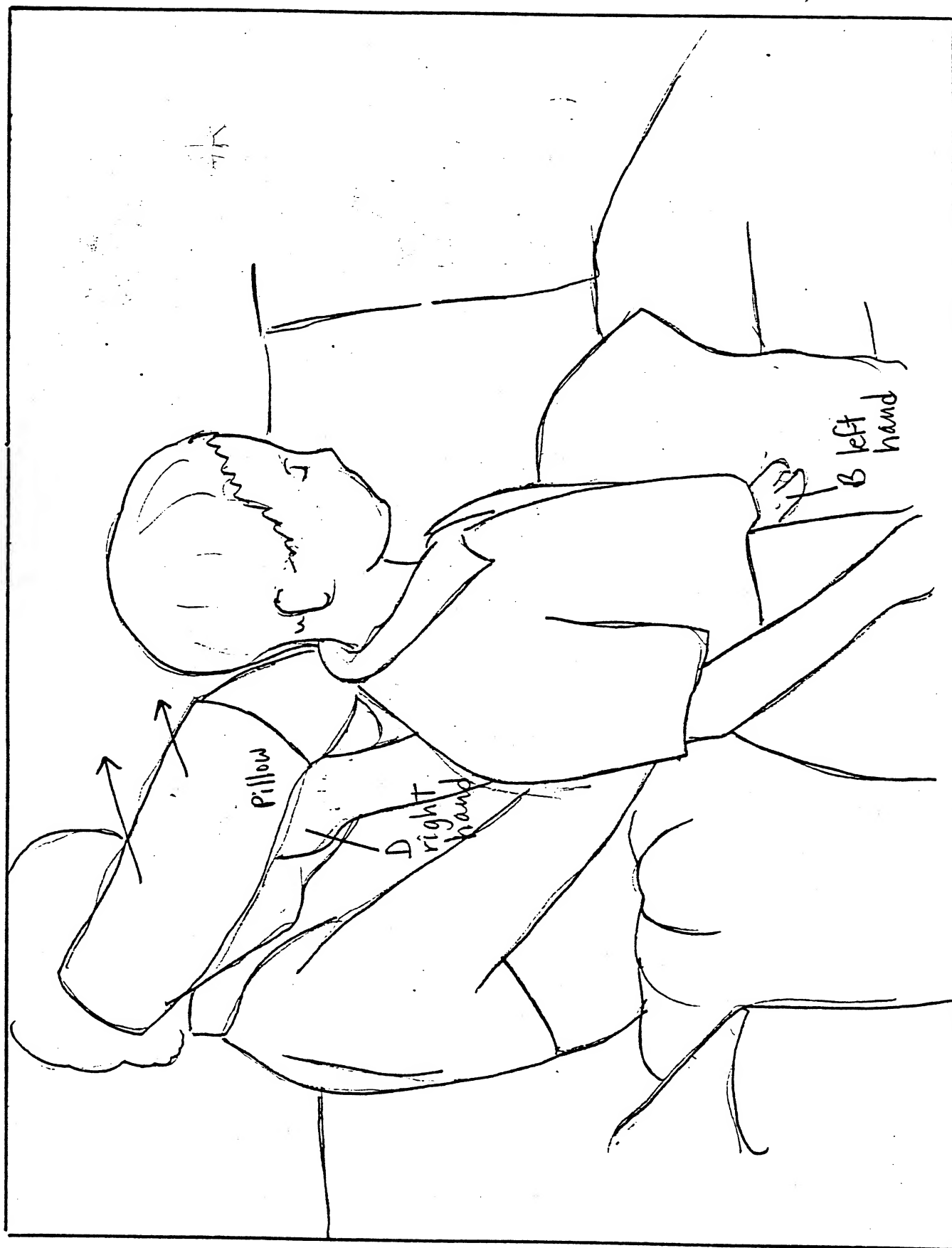
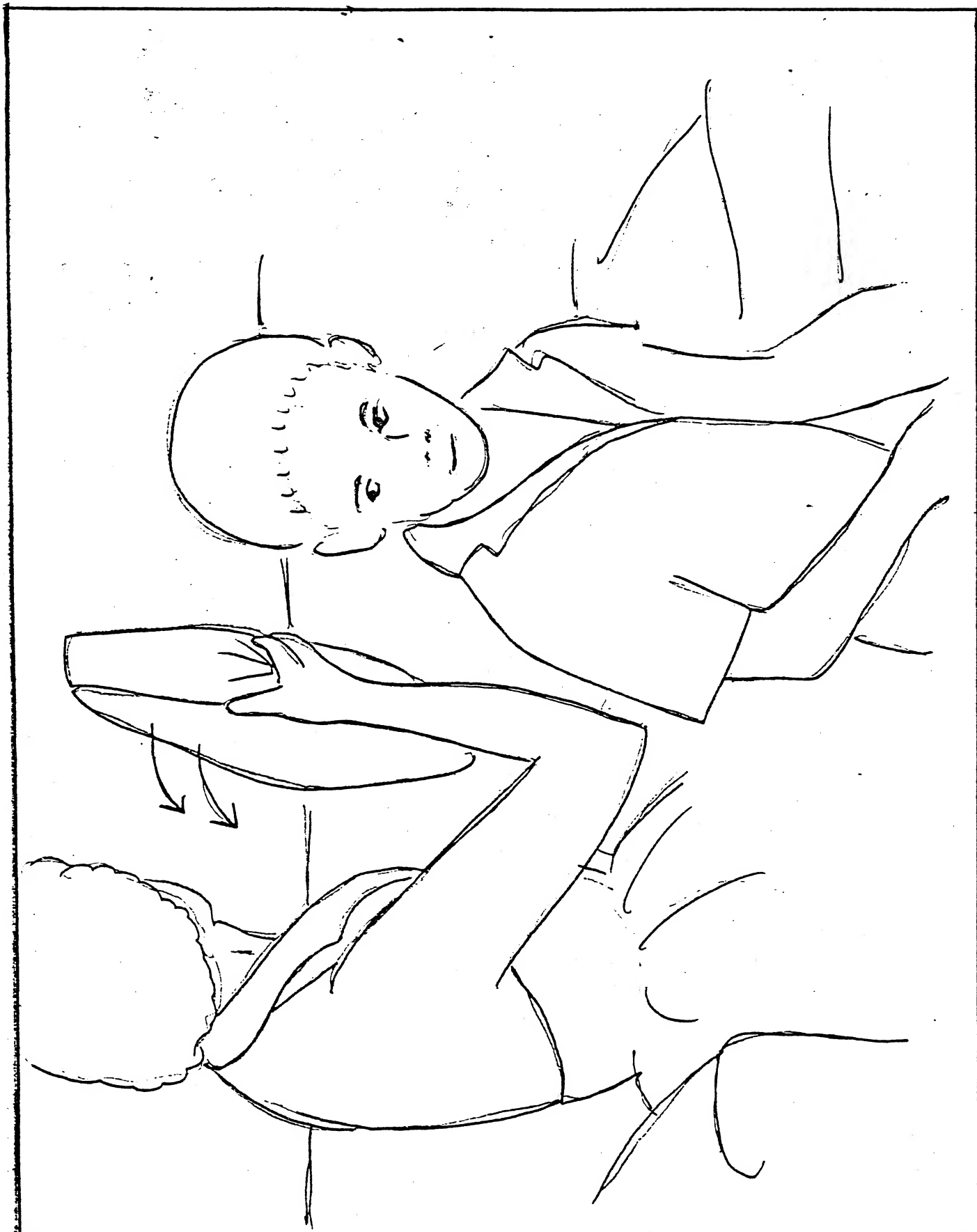
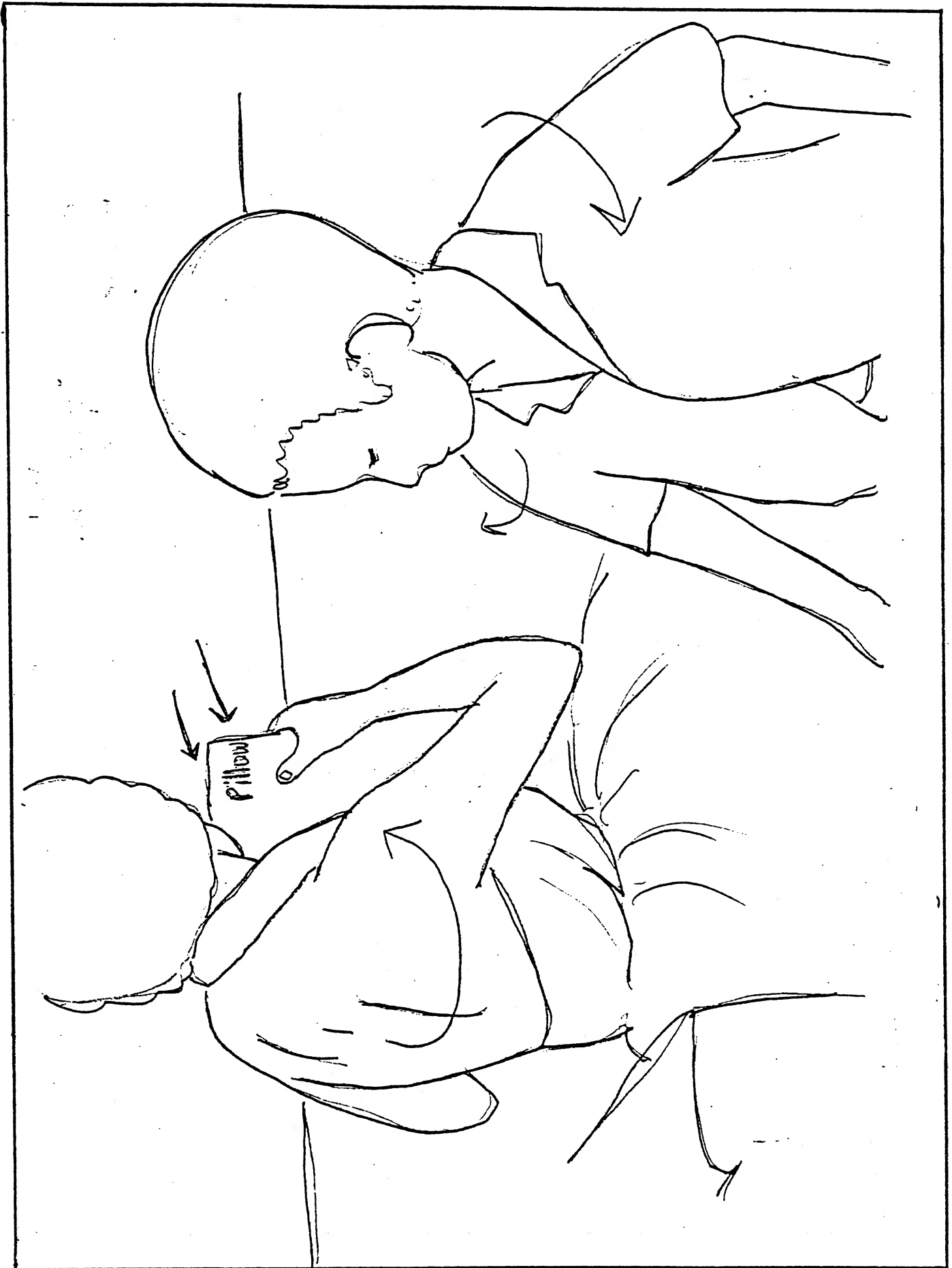


FIGURE VI-20: FRAME 001750 (APP.)





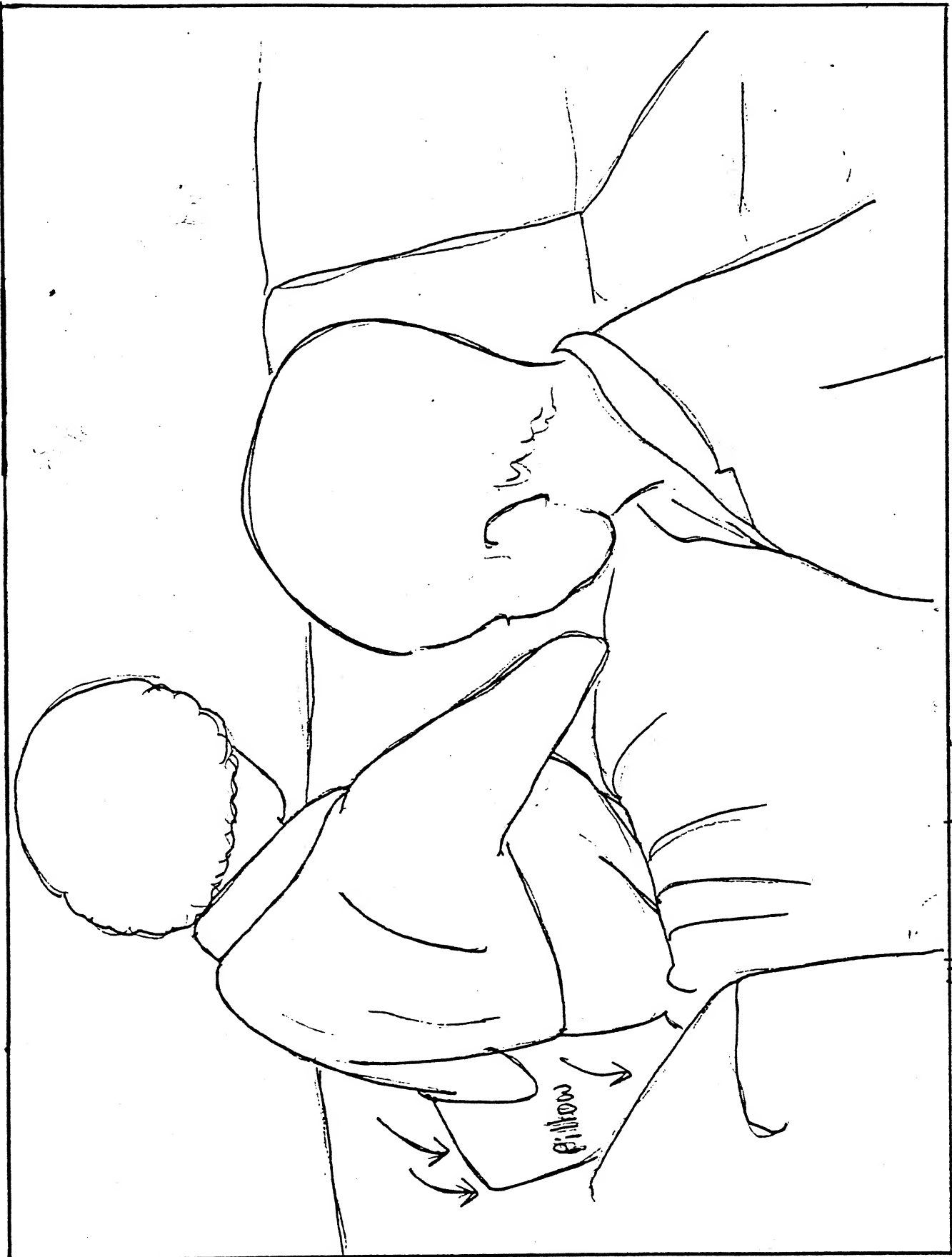


FIGURE VI-23: FRAME 001778

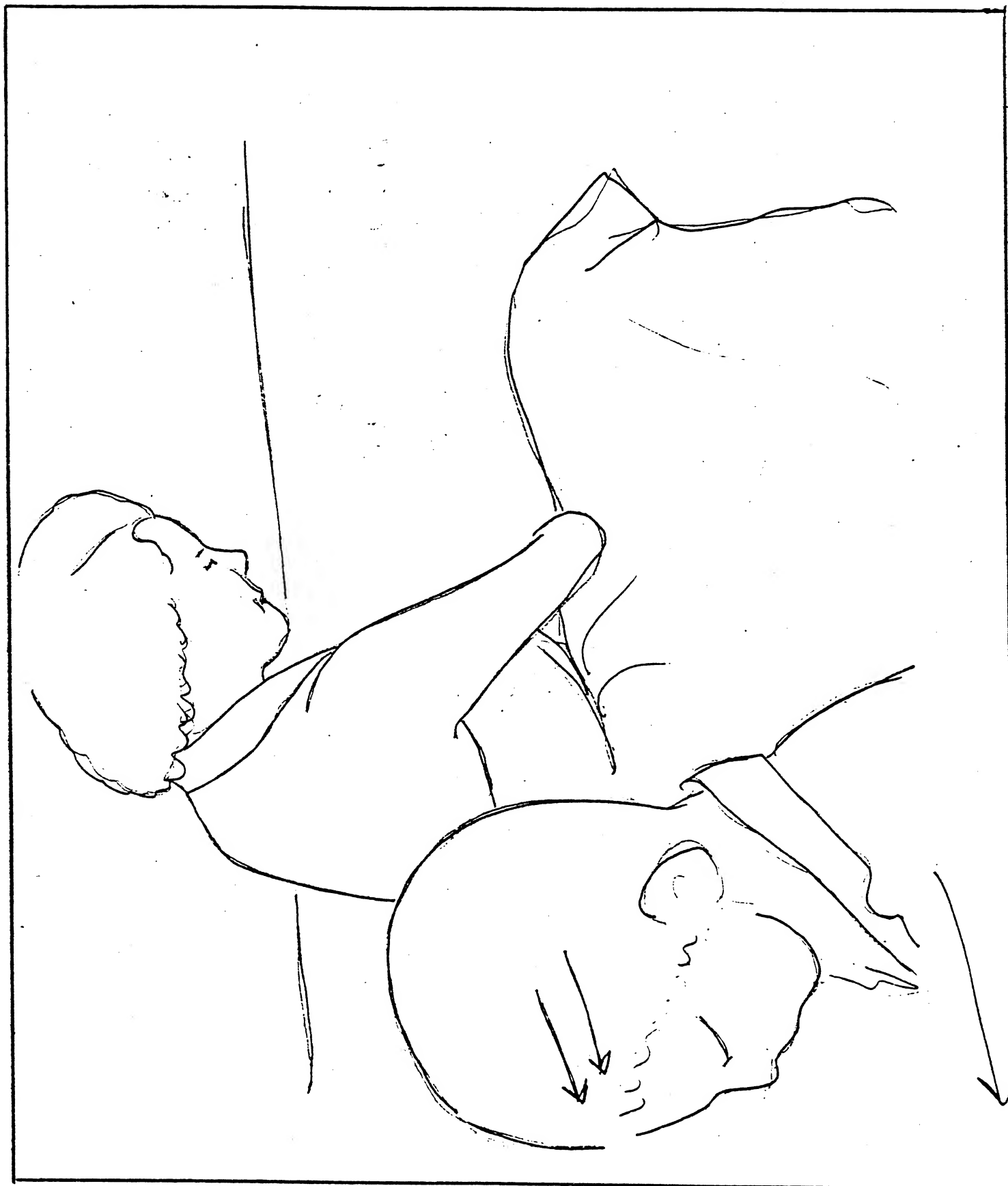
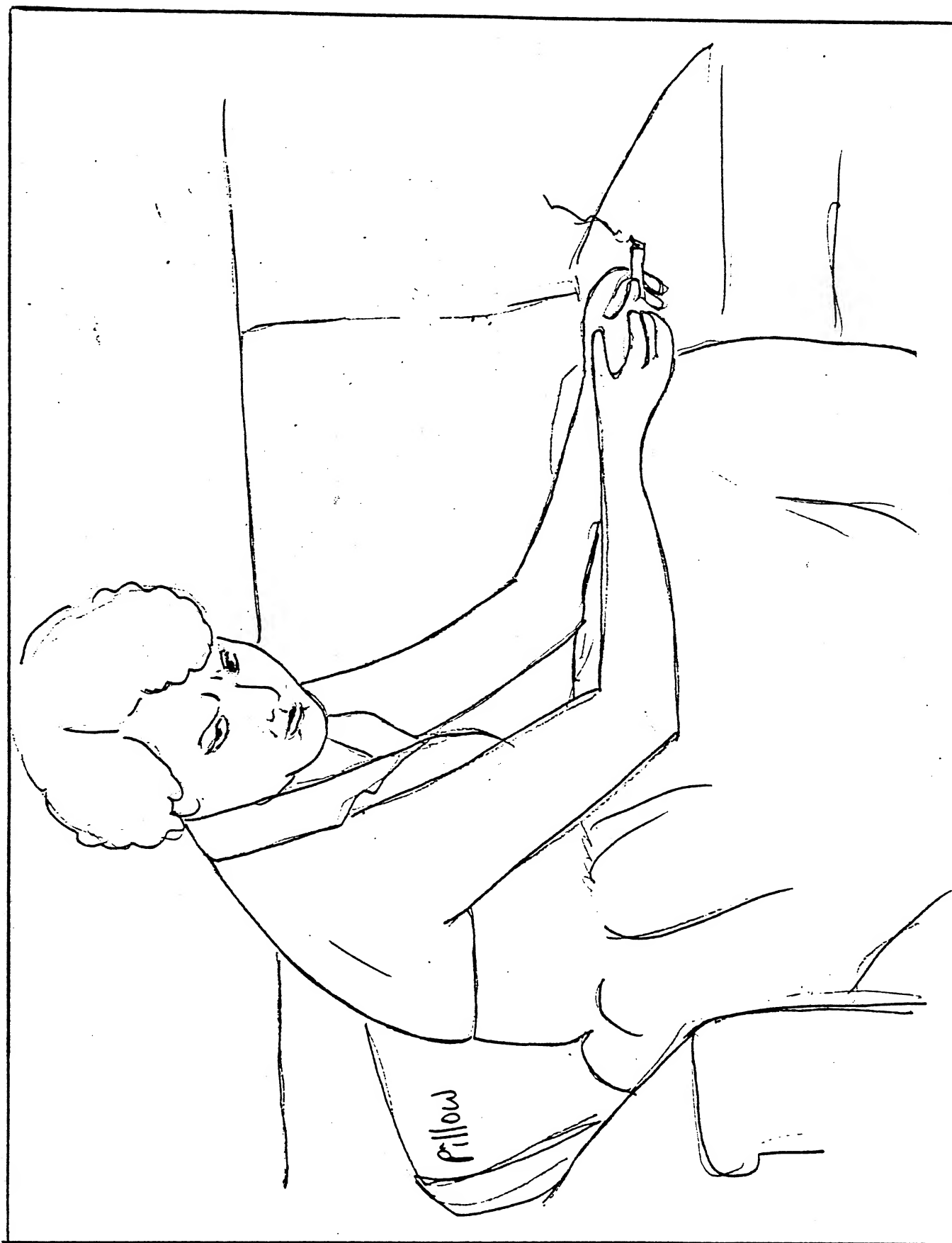


FIGURE VI-24: FRAME 001817

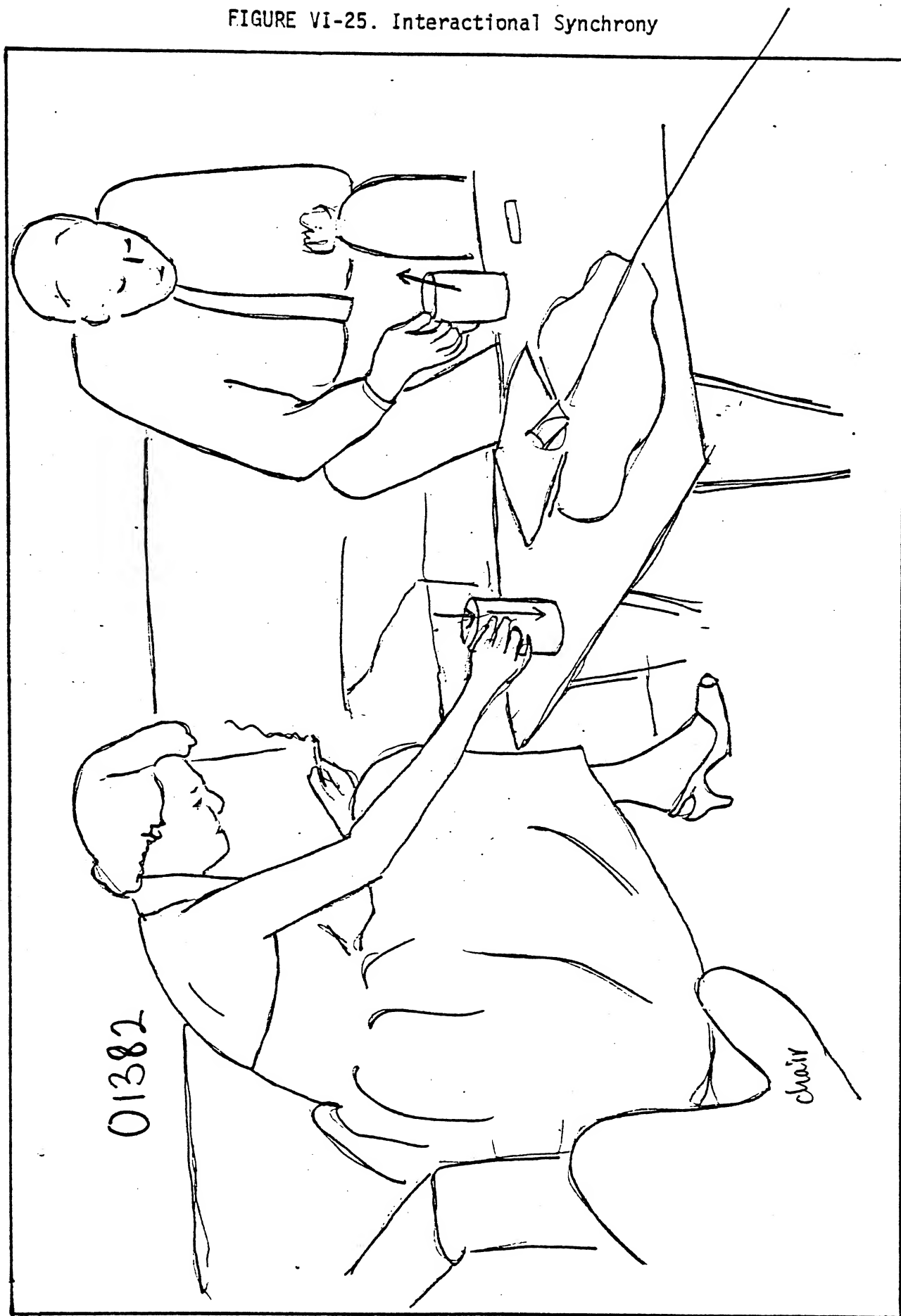


5. Interactional synchrony.

Interactional synchrony refers to simultaneity of motions in terms of beginning, ending, and directional change points for two or more interactants. Frame 1382 has been traced here as an example of interactional synchrony involving directional change on a relatively gross level. "Gregory" starts to raise his stein from the table in the exact frame in which "Doris" lowers hers to rest on the same table. Another example of interactional synchrony mentioned in the NHI (Chapter 9) is the coincidence of "Billy's" motion of rising from the floor with his mother's shoulder motion. It is likely that many more examples of interactional synchronies would have been found if the cameraman had not performed as many zooms in for close-ups on "Doris" as he did.

Neither the NHI team nor I have examined this corpus in terms of interesting dissynchronies, in part due to the technological problem of silent analysis projectors which prohibit matching of motion and sound at slow speeds. A slow-motion videotape playback recorder might be useful here.

FIGURE VI-25. Interactional Synchrony



6. Position shifts and punctuation.

"Doris", "Gregory", and "Billy" do not maintain the positions and postures seen in frame 00001. As the following tracings show, "Doris" tended to change her postures with motions involving the entire body over a wide range before assuming a new posture.

These tracings show some of the postures assumed by the participants in the film with the tentative guess that shifts in posture signal punctuation of discourse units. The data here cannot be exhaustive due to the cameraman's exclusion of one or two participants when he zoomed in.

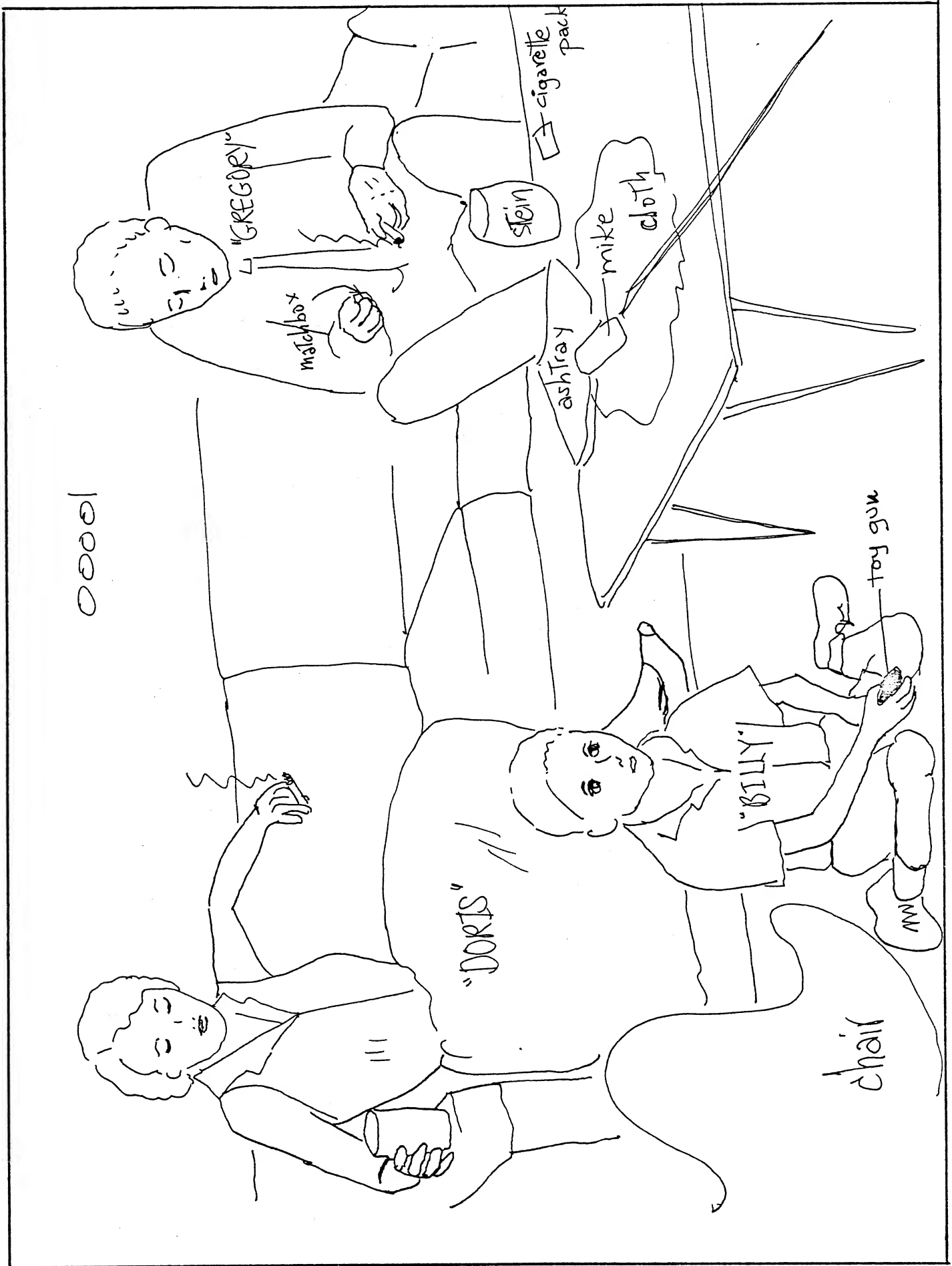


FIGURE VI-27: FRAME 0000821

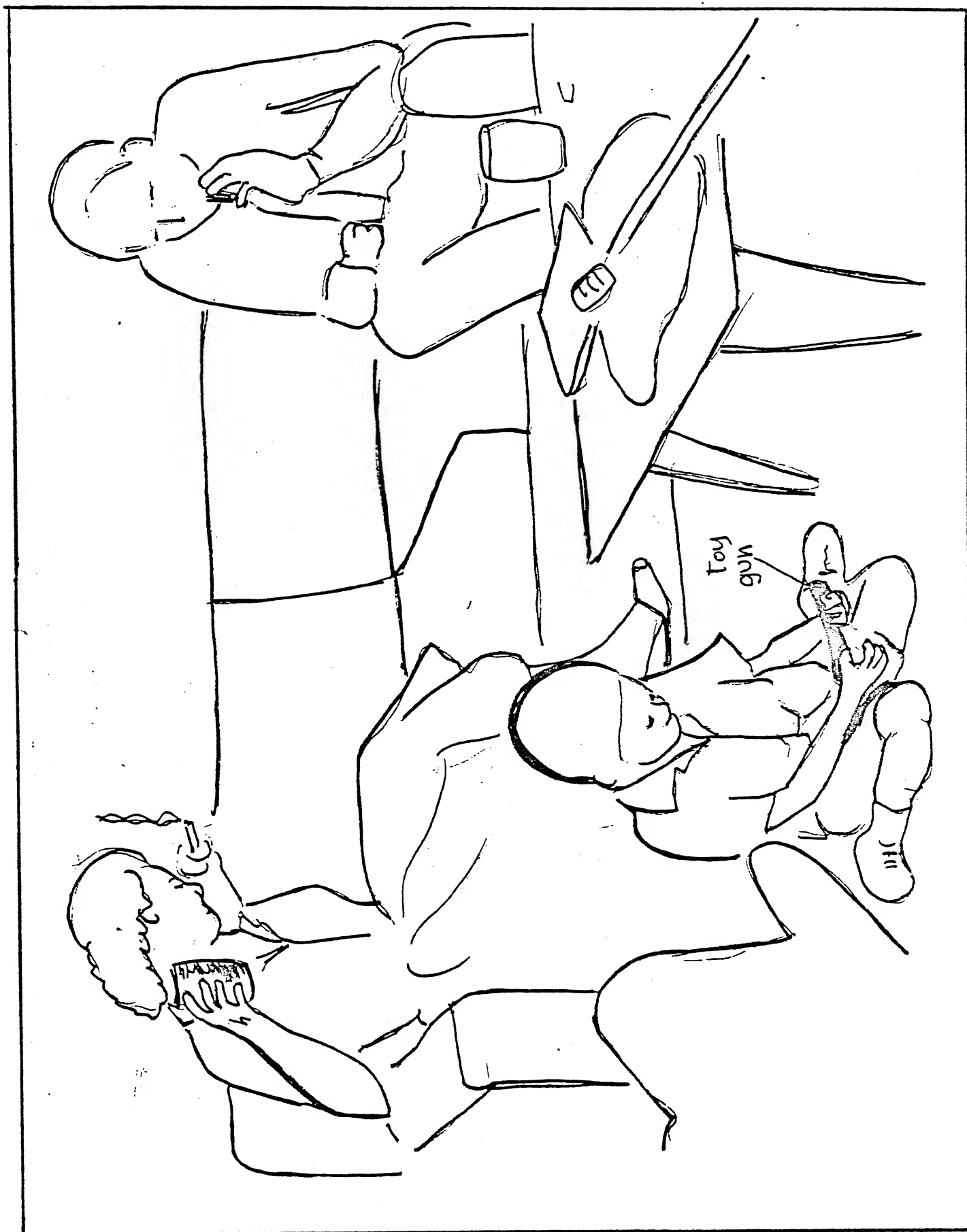
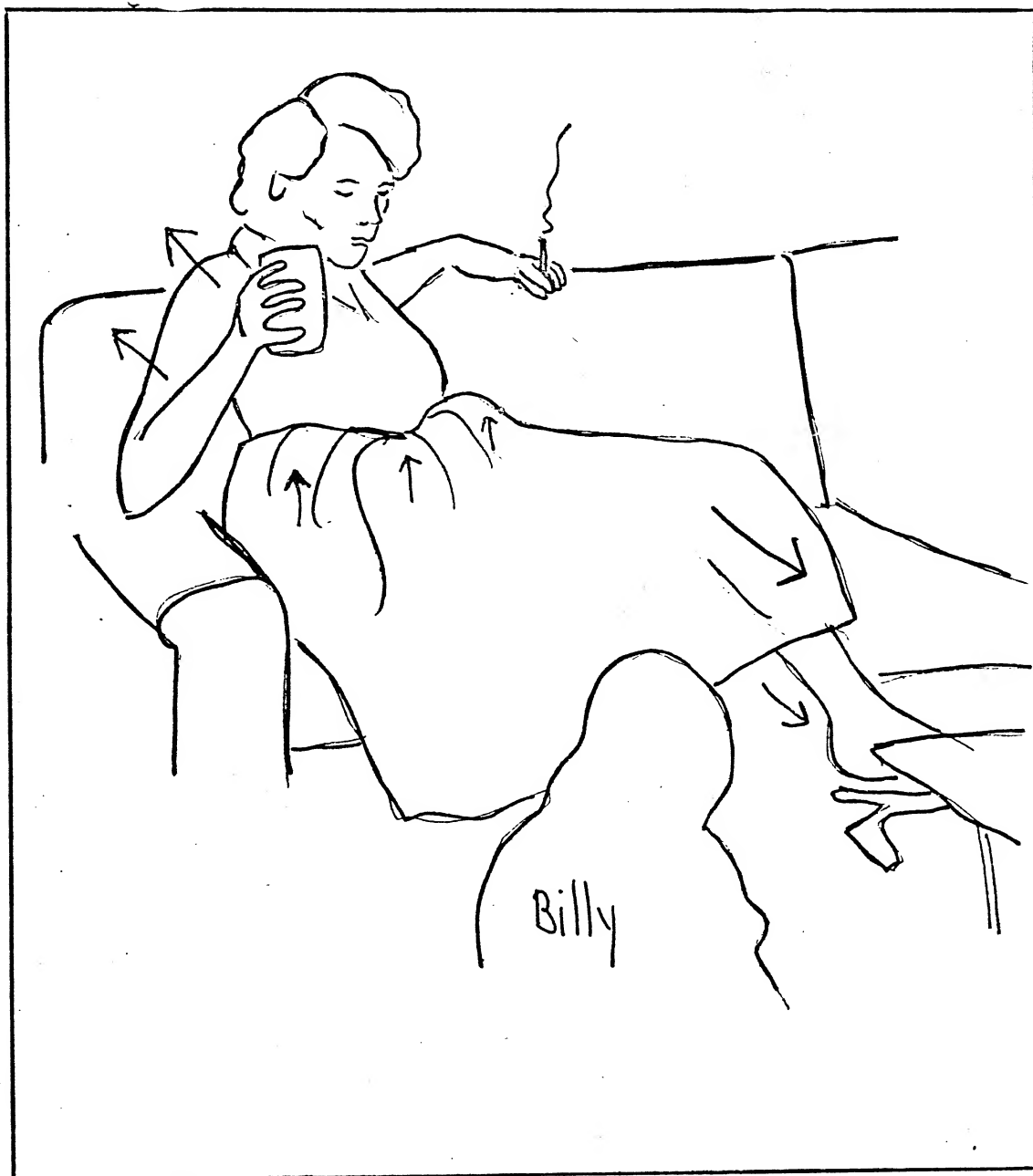


FIGURE VI-28: FRAME 0000876



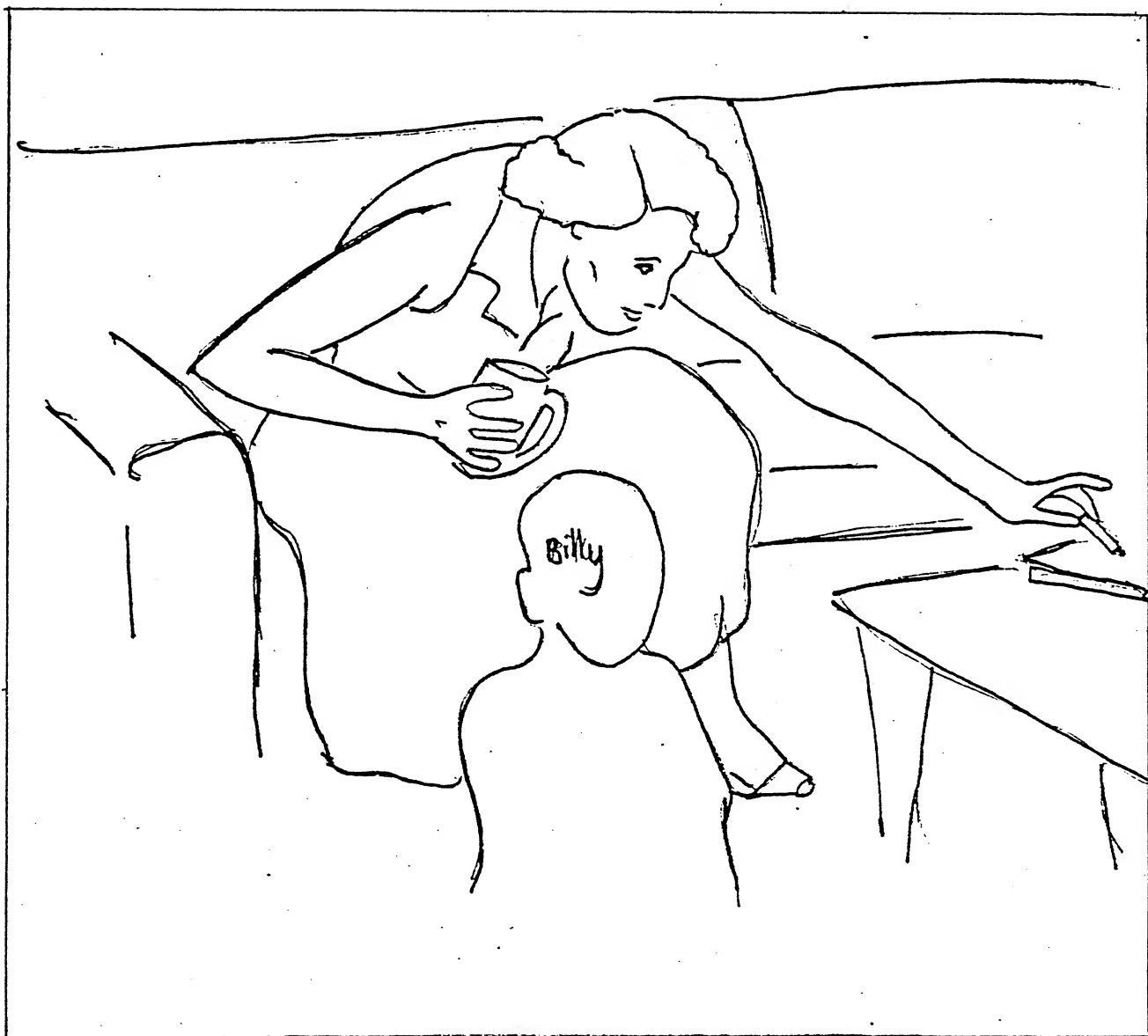


FIGURE VI-30: FRAME 000996

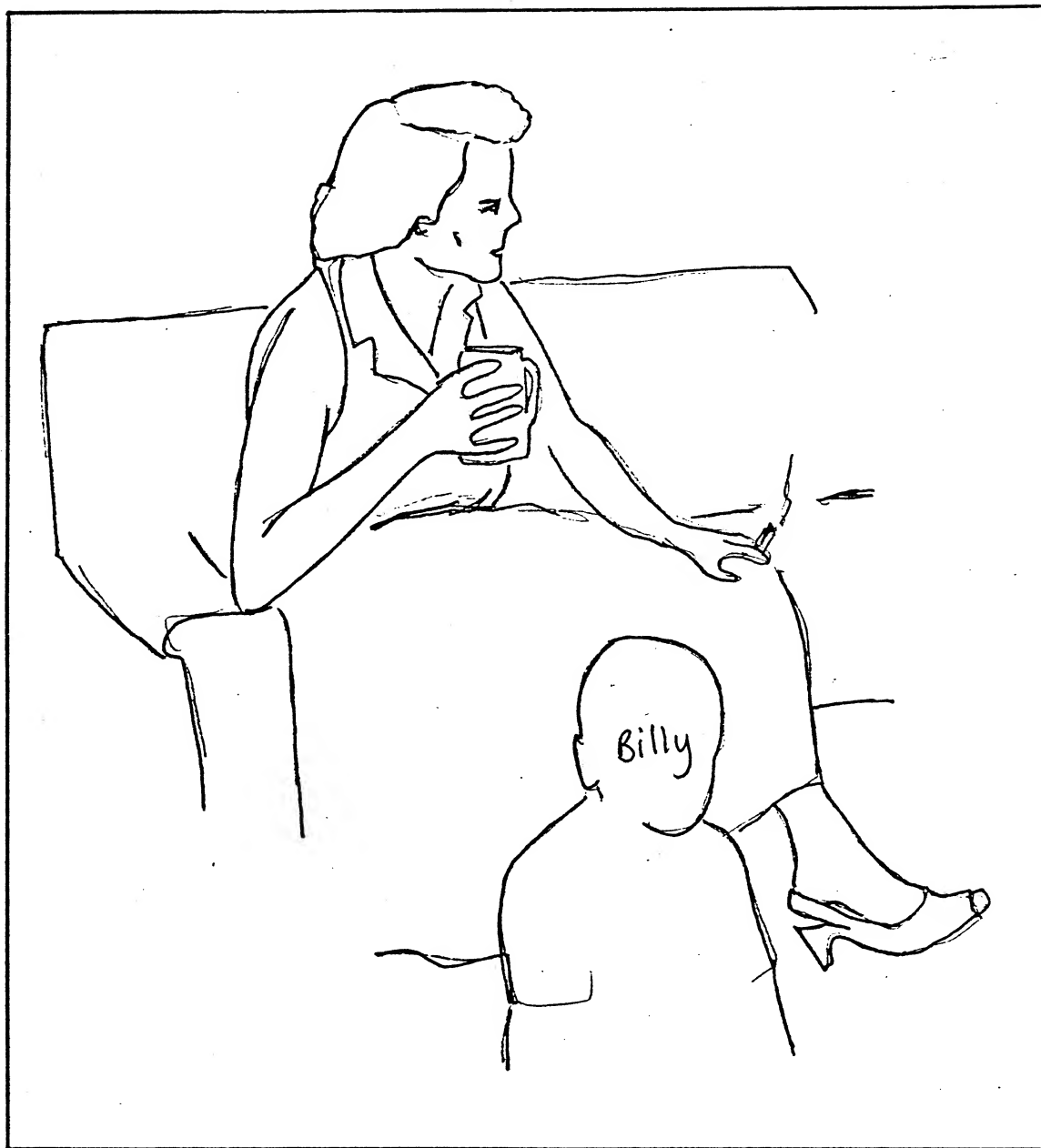
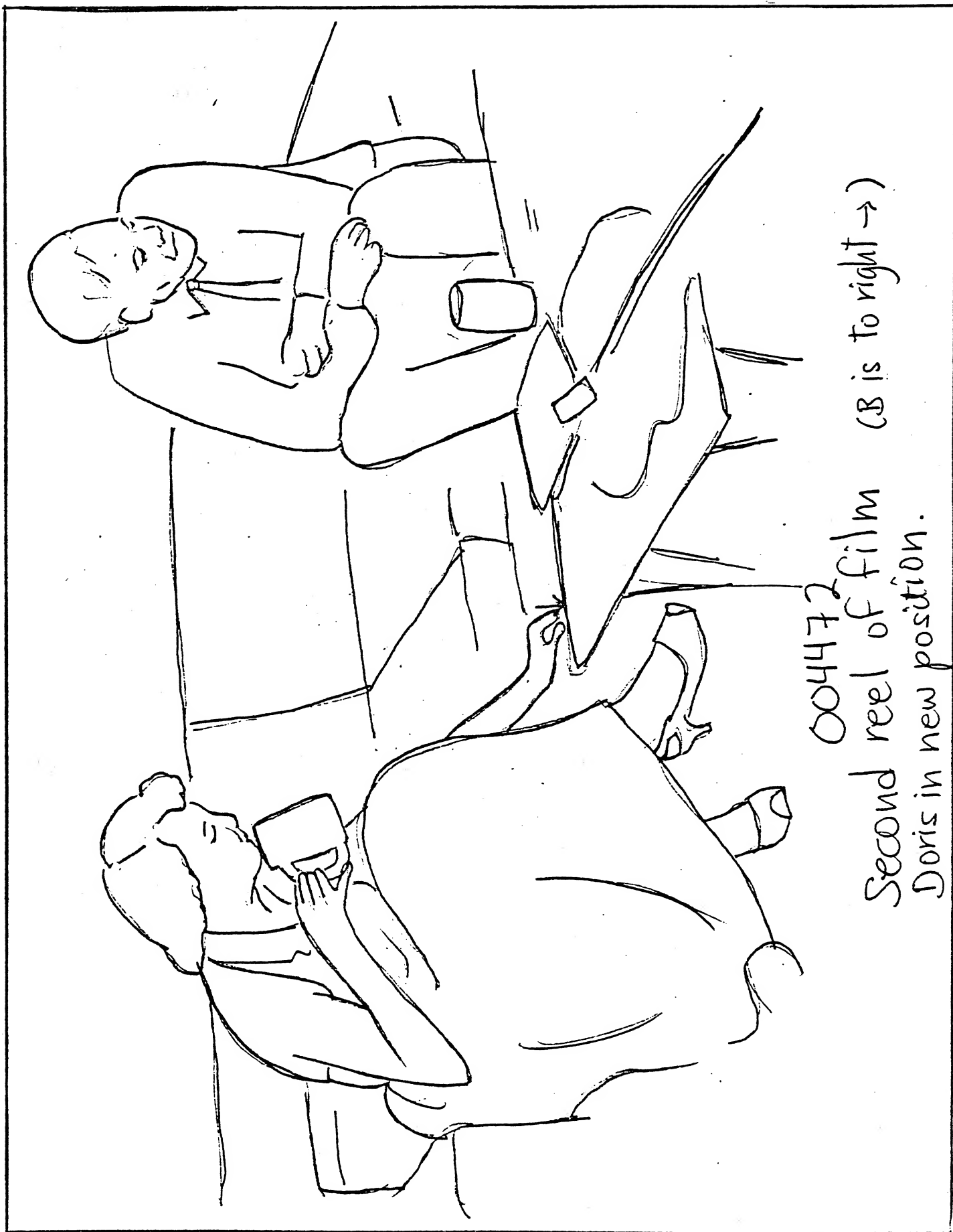


FIGURE VI-31: FRAME 0004472



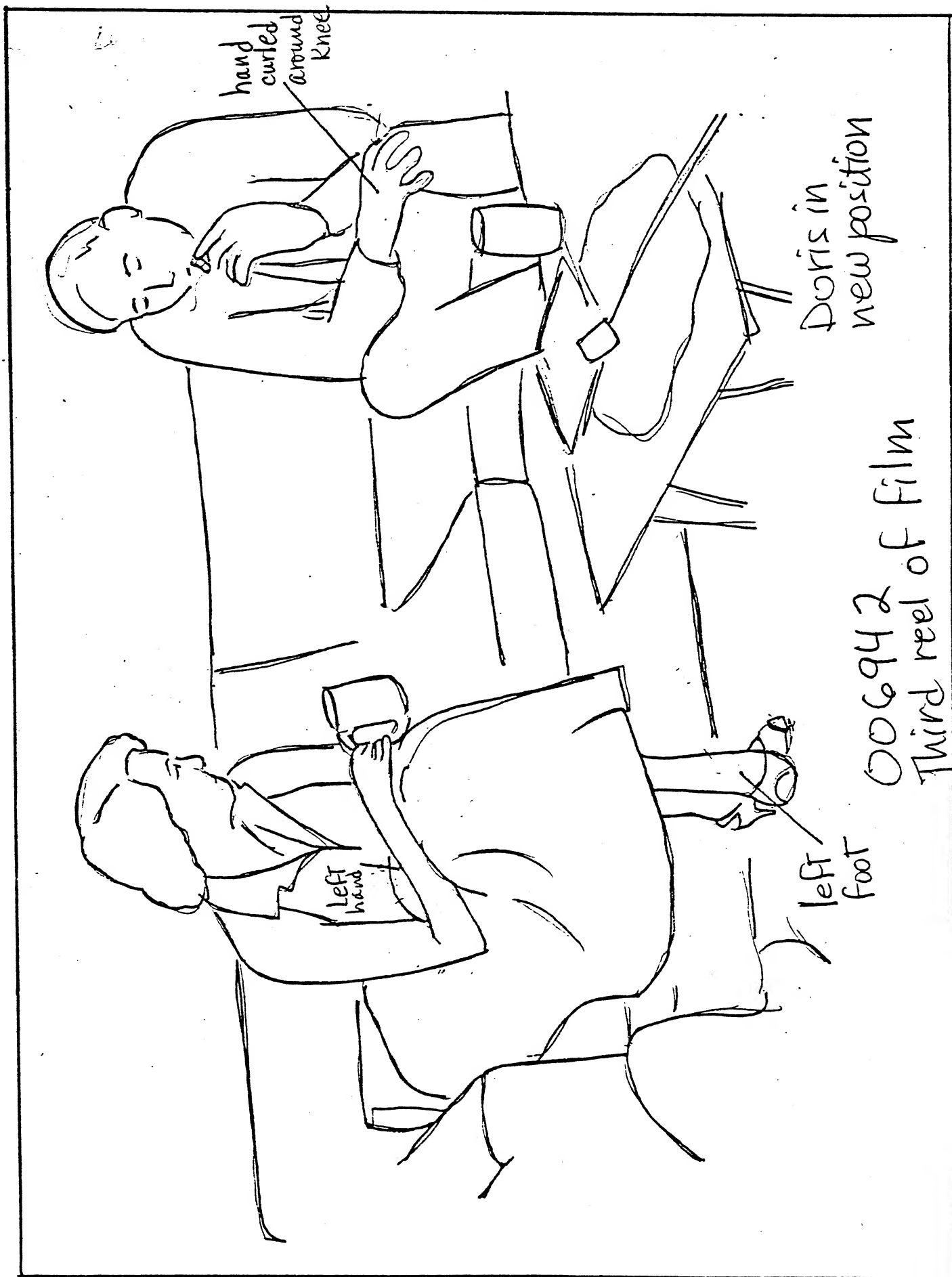
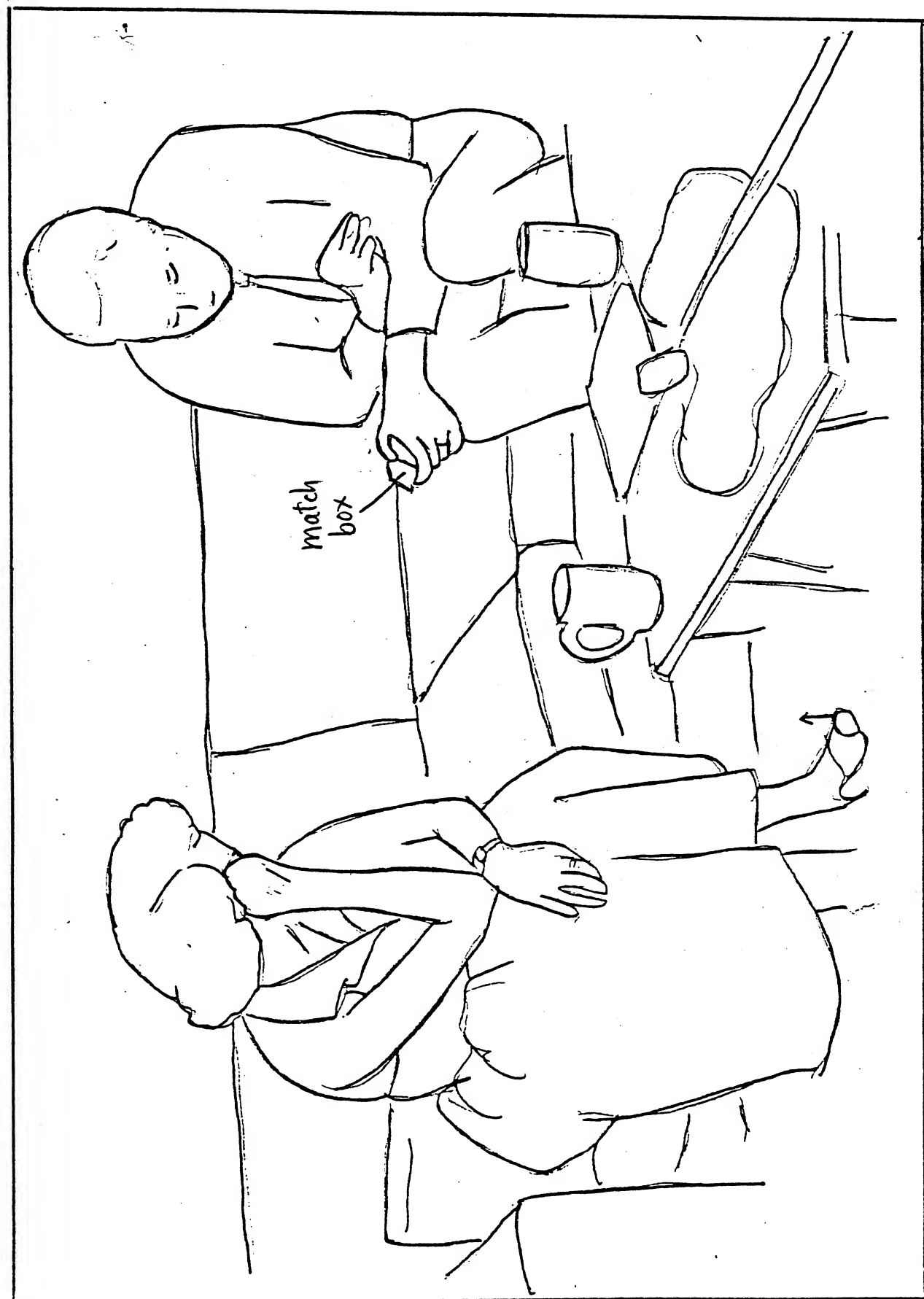


FIGURE VI-33: FRAME 00010078



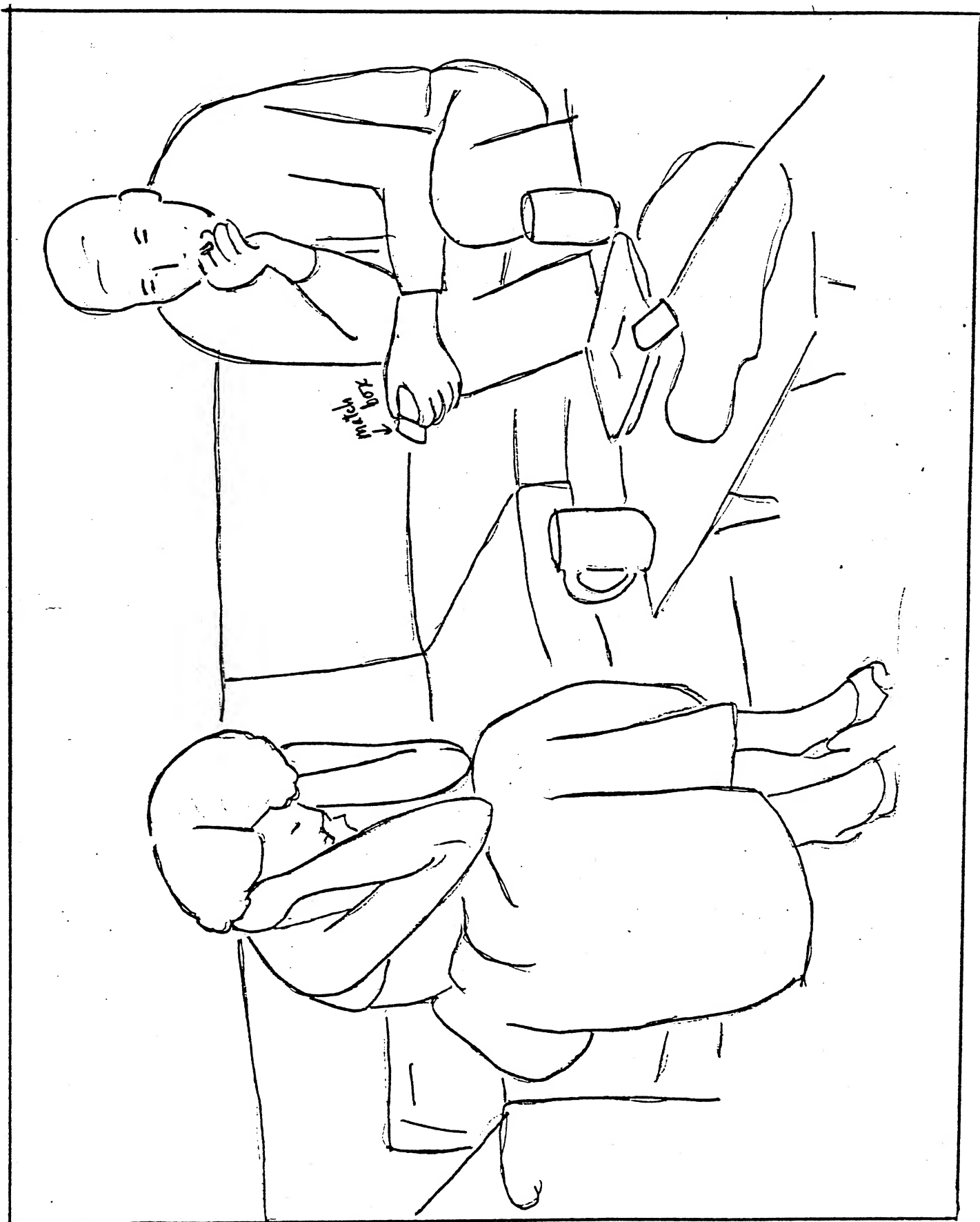
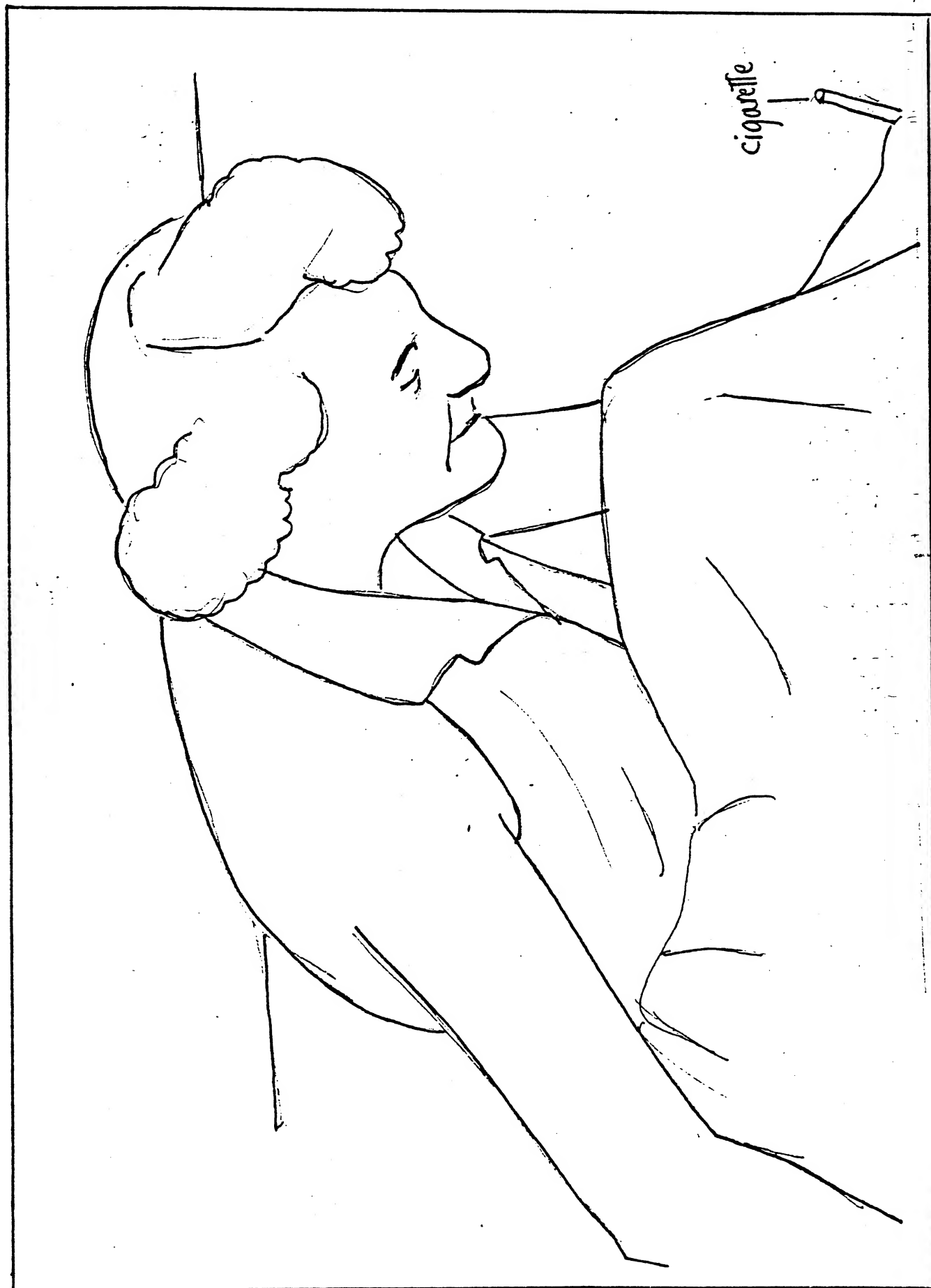


FIGURE VI-35: FRAME 0013441



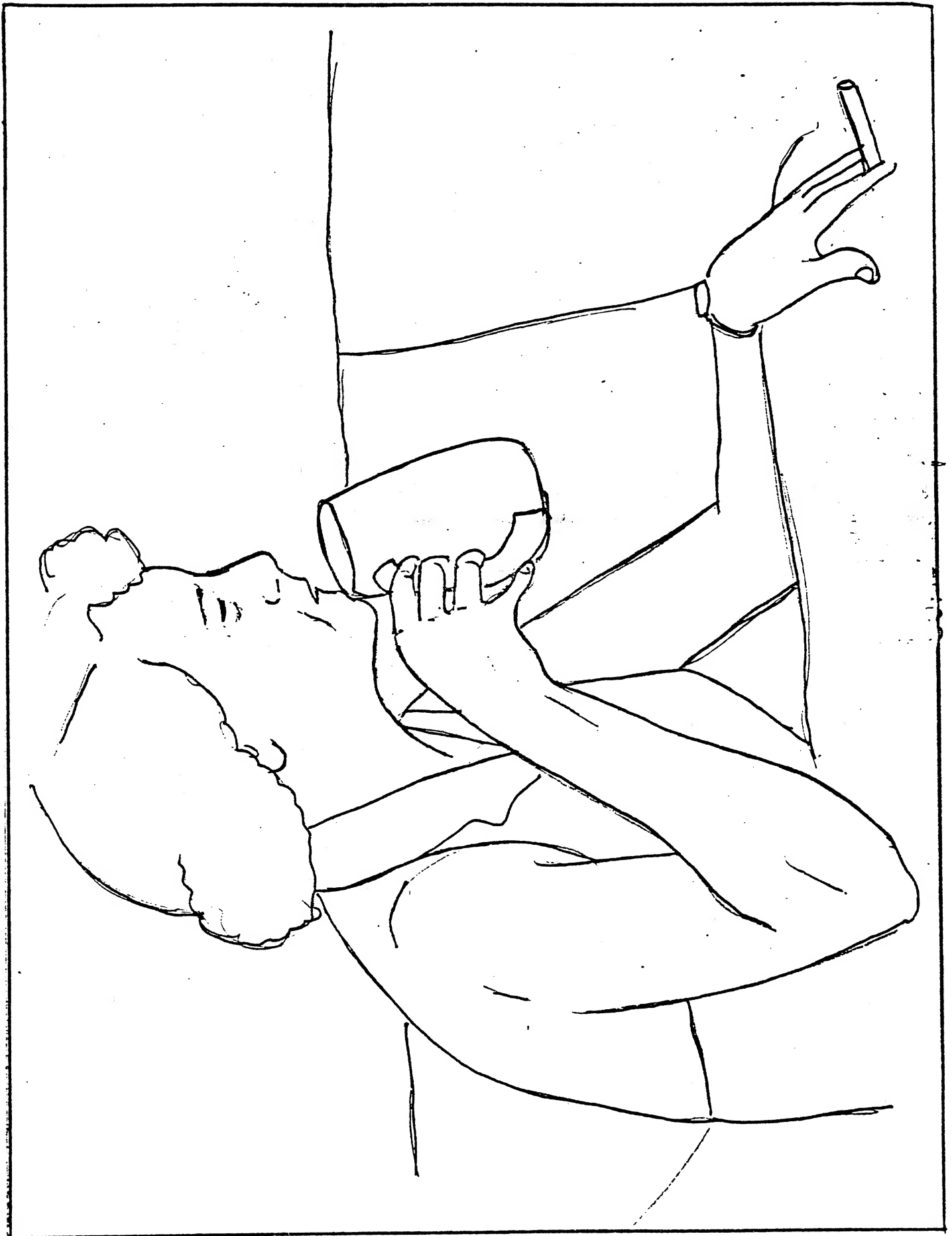
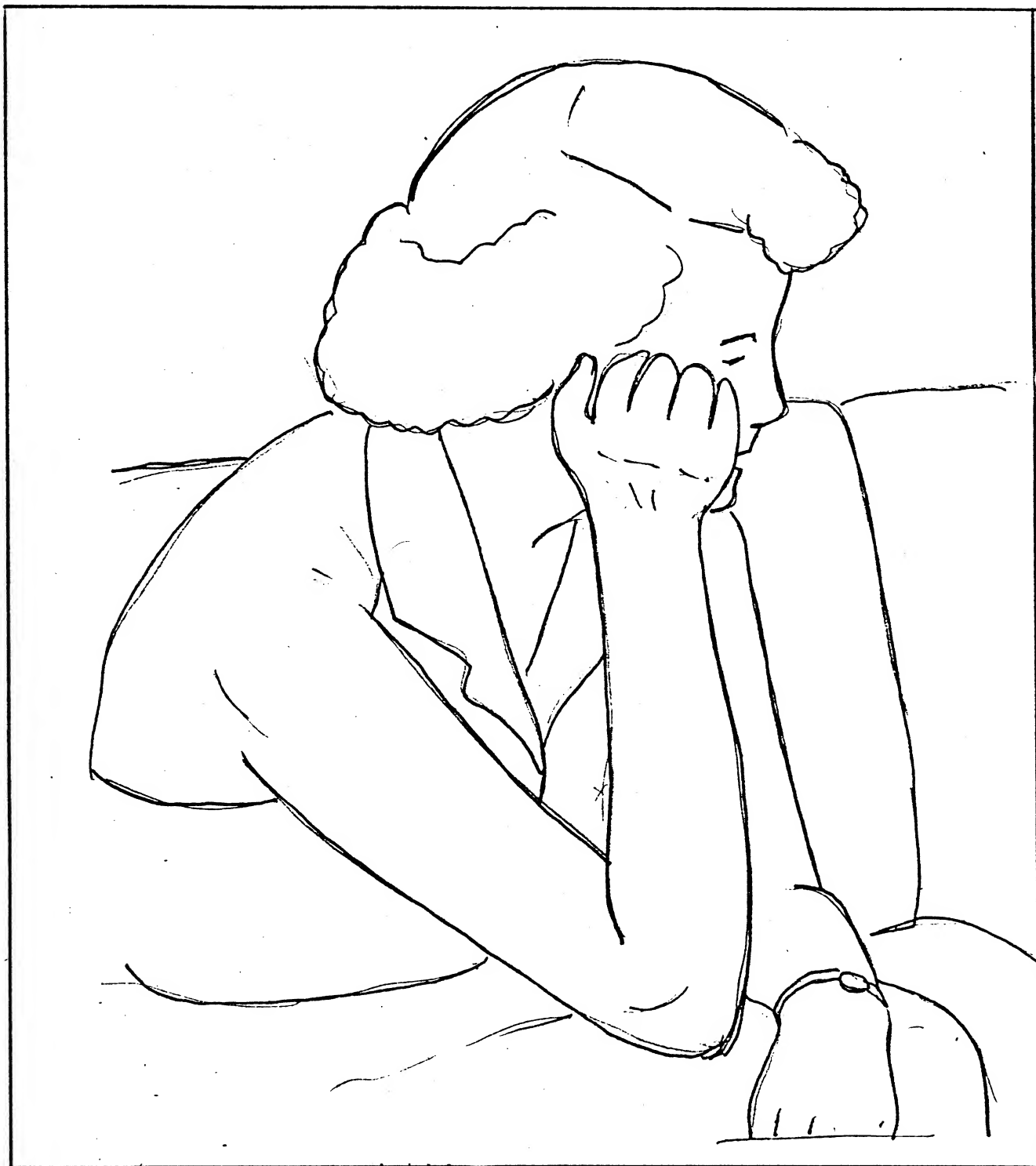


FIGURE VI-37: FRAME 0014916



7. Physical setting.

The "Doris" film was made in the family living room. The tracing of film frame # 0001 shows the couch, coffee table, and wing chair (on our left with its back to the camera) which were the principle pieces of furniture involved in most scenes in this film. Props such as beer steins, cigarettes, match box, cigarette pack, and toy gun are also shown.

Note that frame 0001 indicates the point at which the camera was first run but comes well after the start of the interview itself. These positions and postures may or may not be those assumed when the participants first arranged themselves on couch and floor.

Frame 004132 shows a "fortress" constructed by "Billy" from sofa cushions, pillows, and cardboard boxes. It is located to our right of the couch seen in the first frame. While "Billy" moves from the couch area to the fortress area, the adults tend to locate themselves in the couch area. "Doris" leaves this area on more than one occasion when called by "Billy" to go outside or to the television room, but she returns to the couch.

FIGURE VI-38: FRAME 000001 PHYSICAL SETTING

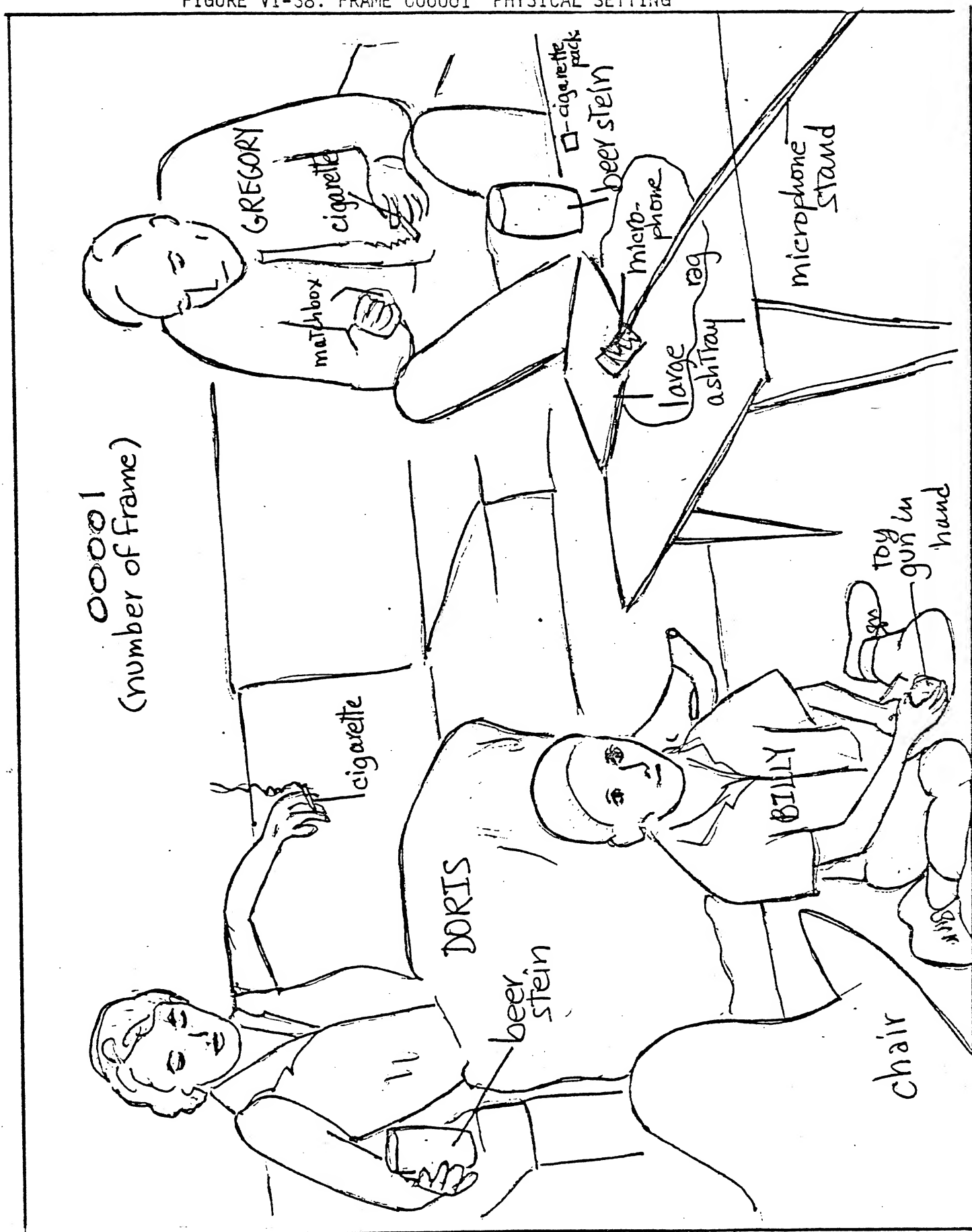
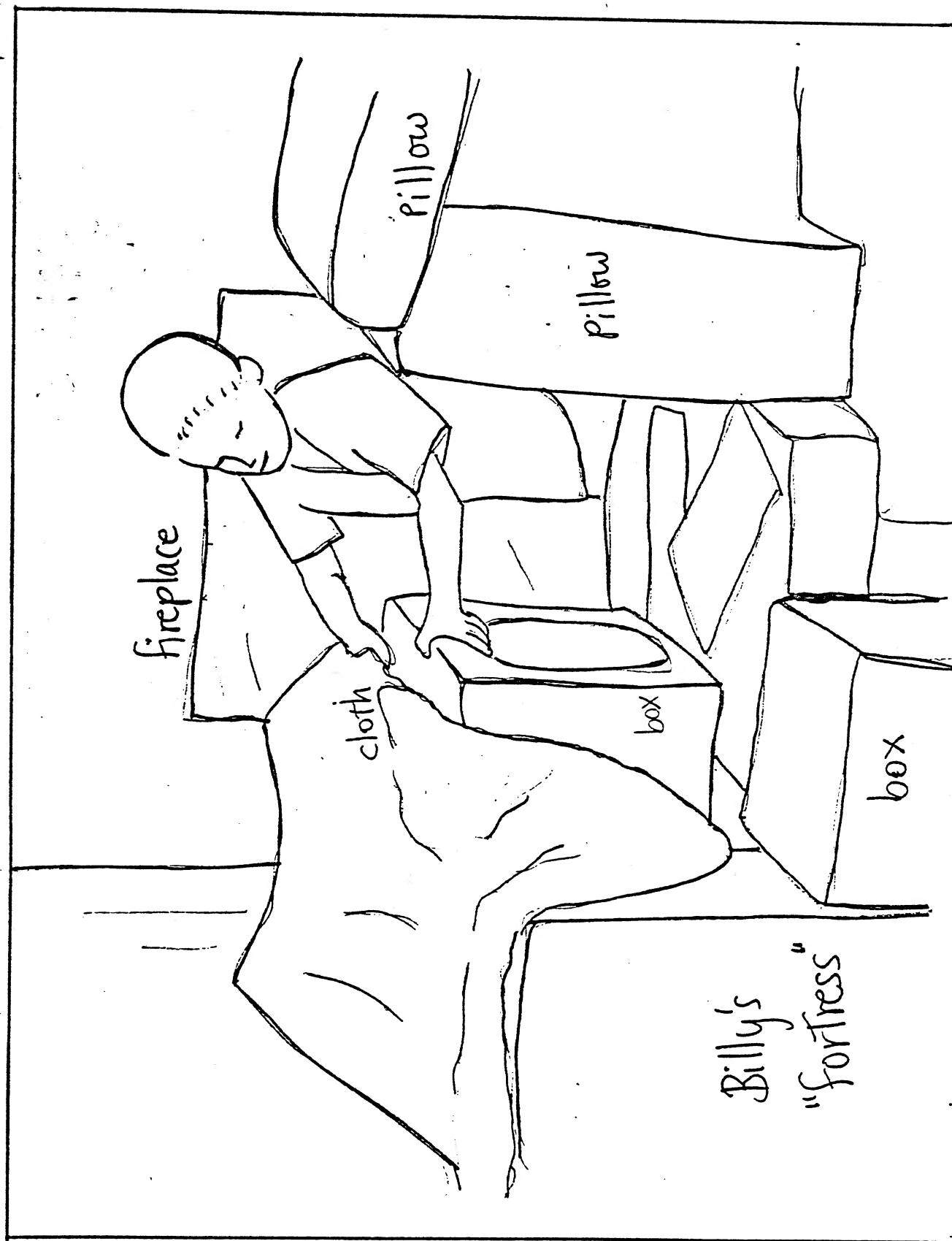


FIGURE VI-39: FRAME 004132 PHYSICAL SETTING



8. The interview: spoken discourse.

The actual "interview" event begins before filming started and after some preliminary activities of setting up which were recorded on audio tape. These portions of tape which cover periods of interaction preceding and following filming reveal information about the relationships of all four participants: "Doris", "Gregory", "Billy", and the cameraman. The husband "Larry" is also heard at times when he is not seen on film.

"Gregory" arrived at the house with his cameraman at about 4:00 p.m. The house was empty. Fifteen minutes later, when they had left and gone to another location to call, they found "Doris" at home and were invited to come right over. In effect, "Doris", "Gregory", and the cameraman all participated in setting up the scene for filming: "Doris" by distributing homemade beer and possibly by setting up furniture, "Gregory" and his cameraman by setting up equipment.

When the tape recorder was first turned on, during this setting-up period, "Billy" was apparently drawing a picture for his grandmother with crayons. "Gregory" (from here on referred to as G.) comments, "That's a pretty nice picture." "Doris" (referred to as D.) explains that it is intended for the boy's granma in return for a gift of clothing and that "Billy" (referred to as B.) had promised to make this picture for some weeks. G. asks B. his age and is presumably answered, but the answer is difficult to hear. D. distributes steins of "home brew". D. and B. become engaged in an interchange about his crayons; she explains to him that he has to put them away because they "get mashed into things". During this time the cameraman has been setting up lights, camera, and other equipment.

D. introduces the topic of "communication", saying that she and her husband (L.) had attended G.'s lectures the previous fall and that L. intends to do his dissertation on communication. Apparently a book on communication or perhaps some of Bateson's materials on communication are in sight, and she explains their presence as a result of the family's interest in communication and not as a result of trying to impress G.

G. addresses B., who is apparently playing in his "fortress", "What is all this?" B. shows off a house, telescope, and other parts of the construction, while G. comments with back-channels of "Mm hmmm" and "that's nice".

The cameraman (CM) asks B., "Know what this is?" and explains, "It's a microphone". This is the first of several exchanges calling attention to the equipment.

A period of silence follows. The next topic of conversation is home-made beer. D. shows G. her kitchen "brewery", going off-mike. When they return to the living room area, G. makes a joke about the strong brew changing the resolving power of the lens, a joke followed by laughter and comments from all three adults.

The next interchange involves B.'s decision to start putting his toys away in the toy chest, leading to D.'s comment, "Well, now I've seen everything". As B. throws toys in with resounding clashes faithfully recorded by the microphone, D. resumes the topic of brewing beer at home, mentioning her neighbors' experiences. G. switches to a new topic and asks D. about B.'s fortress construction. D. explains its various uses. She quickly changes to the topic of trains, mentioning that several trains run near her house in the late afternoons. During this time the cameraman was presumably searching for an outlet, for

B. says, "hey, the plug's over there, you know...right over there behind that chair." D. is continuing to speak about trains and the dangers they pose to neighborhood children, while B. comments about his toy gun, which is apparently broken, "stupid gun". The CM says that he'll have to get a stand from the car (apparently addressing G.) and D. breaks in to ask him, "What are you wanting?". The CM answers that he needs something to hang his lights from. All three adults and B. engage in a search for hooks on the ceiling when D. comments, "...the other day I noticed there's some hooks on the ceiling...probably never find them again...". G. comments, "You could get one on the hooks up here, get one there all right", and B. shouts, "up there!". This general involvement in setting up equipment should be taken into account when the researcher attempts to infer the extent to which equipment and technician influenced the behavior recorded; since this conversation was recorded on tape and not film, it is all too easy to overlook. In my view, the corpus properly includes these "pre-interview" interactions.

At this point the tape recorder may have been moved to a different location or simply switched off for a period of time.

When tape-recording resumes, G. is saying that he and the CM had expected to get lost on the way to D.'s house, but arrived early instead. D. responds with a description of her hectic Thursday activities, saying twice, "Thursday's not my day". G. tops her with a description of his sixteen-hour day the previous Tuesday. There is an awkward break in the conversation when D. comments about G.'s busyness: "I would suspect this would be a difficulty with someone like you because..."(fading off to silence). G. responds with silence. I have the impression that he impressed on D. that comments on his life and activities were not permitted with the implication that D.'s life and activities were the proper subject of discussion.

The CM breaks this silence with his comment (apparently referring to B.'s activities outside) that B. won the race. D. returns to the former topic of busy Thursdays, while B. and the CM engage in a discussion about a piece of equipment. D. ends her tale of awful Thursday schedules by saying "...and get a few things done in the meantime" which the CM overlaps with "Thank you", apparently addressed to B. The CM states that he's trying "not to blast" (i.e., trying not to overwhelm the film subjects with his lights, in my interpretation). His comment is followed by a silence.

It is at this point that both I. and the NHI team sensed that the "real" interview starts. While the CM has not yet started to film, the content and nature of the conversation between D. and G. has changed. The NHI team started their verbal transcript with D.'s comment that the last time G. called her was on a Thursday, the usual hectic kind of Thursday, and her friend Marion had said, "well, if he wants some problems, Thursday's the day for it". This comment, and the fact that D. repeats it to G., indicates that the topic of this conversation, related to previous conversations held by D. and G., is problems, and specifically D.'s problems. While the CM continues his activities of setting up, asking "Does that bother you?" and explaining that usually the ceiling reflects more light, then asking B. to watch the red needle, D. continues her conversation with G. She mentions the films he had shown in a lecture (which I assume were the films called "Communication and Interaction in Three Families") and the topic of "nonverbal communication". A train roars by, the first of many, and she pauses only to comment "Francisco-way Special", going right back to her topic. G. responds with his usual back-channels of "yeah" and "mm hmm". D. expresses anger at the other mothers of pre-school children who had seen

films and discussed them at "coffee mornings" because they didn't seem to get the point. As she says, "...oh, well...", G. breaks in to ask, "What is the sort of natural history of this whole problem, business as far as you're concerned, with Billy and so on." This could be taken as the first official question of the interview. Coming as abruptly as it does, breaking the context of G.'s lectures and films and the other preschool children's mothers, and worded as vaguely as it is, the question makes sense only in the context of previous conversations held between D. and G. to which we are not privy. In another interpretation, the "interview" proper could have started with D.'s selection of the topic of "problems", which G. did not pick up, possibly because he was stalling for time until his technician had finished setting up equipment. These questions cannot be answered from the evidence on the audio tape alone.

D.'s response to this abrupt question is a filled pause and the counter-question, "It depends on which problem you're talking about," after which she laughs. G. counters coyly, "that is the one". The implications of this exchange may be that D.'s problem is that she has too many problems to be able to choose one, or in addition that G. refuses to select a particular problem for discussion, giving D. that responsibility, or that G. has given her as much direction as he plans to and from now on the interview is D.'s responsibility. Note also that G.'s question implied that D.'s problems were all centered on B. D. does not seem to accept this interpretation and prefers to center the problems on her own relationship with her husband L.:

There are...but they're being or...it seems to me that they're..improving a great deal. I think it stems ...a great deal from...early infancy when uh the whole general problem of interpersonal relationships and communication around this family was very poorly loused up.

D. comments that she and L. were having "a running battle over" B., and illustrates with the example that she didn't want to be tied down with a baby and L. tried to overcompensate. The film starts at this point, in the middle of this sentence:

It was the reverse of what is usually done,
you know, the usual story about * the mother,
neglecting her husband for her child...

*film starts

As she describes her running battle with L. over B., she grimaces and appears to weep, frequently sucking in her lips and perhaps biting them as well. (The micro-kinesic transcription sample which follows shows these behaviors). She pictures herself as paying too little attention to B. and her husband going to the other extreme of fussing too much, "and there was no happy meeting ground anywhere in the middle". As another example of a problem with B., she starts out by saying B. was a physical feeding problem, but again shifts responsibility from the child to the adults who were taking care of him. She couldn't nurse him, the male pediatrician ordered her to feed B. every four hours "or else", and L. kept telling her that B. was hungry, until she was ready to "throw one of them out one window and one of them out the other".

It is at this point that B. approaches his mother with the pillow, as pictured in Section 4 of this chapter. As the silent interaction with B. goes on, D. continues to tell G. about those times of the boy's infancy, saying that she was "a pretty unstable or immature character" back then, to which G. replies softly, "Aren't we all".

D. next introduces an ambiguous reference to the "only child" which recurs in this interview. At times, B., D., and G.'s single child are each or all referred to. For D., the condition of being an only child implies parental figures "hovering over" you:

...and being an an only child and one who was hovered over uh it just you know it just built up and got worse.

Here again, the interpretation that D. has shifted responsibility from B. to his parents could be supported.

D. now says that the problems with B. are "mechanical", such as feeding and eating. At this point, B. ironically comes up to her with an airplane toy to be fixed. She reverts to the "only child" theme and links it to her concept of battling parents:

...the usual problems which evolve with an only child and two adults in that the child is making normal demands and the adults are making normal demands and there's nobody to battle along with'm.

The reader may sense the unseen presence of D.'s therapist at this point. It is possible that D.'s focus on her relationship with her husband as leading to problems with B. rather than as resulting from B. as a problem may be due to her therapy. I have no evidence for this interpretation beyond my own small knowledge of therapy. The sound film showing D. in session with her therapist consists of D. "blowing off steam" and expressing helplessness at a time when her son is sick and her husband away on a trip and she feels little support from friends or neighbors, and little "teaching" or "putting into perspective" by the therapist is seen.

G. now asks another abrupt question, one which seems even more confusing than his first. Since his speech overlaps with D.'s, it is difficult to determine exactly what he says; spectrographic evidence is of no use here. In one interpretation, G. asks D.: "How are you fixed for neighbor children?" In another interpretation, one used by most of the NHI team, he slipped and asked "How are you sexed for neighbor children". This second interpretation may fit in with D.'s description of her family relationships as a constant battle for attention and a competition of demands. G. could easily have inferred that D. perceived her sexual relationship with L. as one of demands and battles, and, while thinking about that, tried to ask about neighbor children as a way to distract D. from these distressful topics about which she was being so painfully honest. Other interpretations are possible.

D. answers as if she had been asked about the availability of neighborhood playmates for B. She starts to describe a neighbor family and their problems, which turns into another example of parental strife leading to problems with the children. This adult hostility led to B. losing his closest playmate. She goes on to say that B. is willing and able to play by himself and seems quite inventive when it comes to creating projects. G. observes that B. is indeed "awfully lively" and adds that he has an "only kid", a fact which D. may or may not have been aware of. At this point, D. makes the same error she made before the filming started, personalizing the conversation by saying that G.'s child must have trouble since G.'s interests are so intellectual and on such a high level. G. quickly laughs it off with "There's always the yard, after all". (In another remark later on, G. continues his comparison of children to animals by saying that his only child eats like a horse!).

D. launches into another "problem". This theme is B.'s success in

demanding attention from L. when D. wants attention from him, and when L. is tired from a day at work. She characterizes L. as a "little doormat" for his giving in to B.'s demands. At this point a door slams (or some other loud, sharp noise is made) and G. comments "Whango". D. takes the interruption as a point to change topics and returns to the topic of B.'s eating, a problem she previously referred to as "mechanical". Now she says that mealtimes are "murderous" and "ghastly", apparently because B. doesn't eat enough and doesn't eat food he doesn't like. G. comments that his child eats "like a horse". D. sums up the eating problem, despite her colorful adjectives, with "...we've uh really don't worry too much about it any more."

By now, the listener may have a sense that D. is trying valiantly to fulfill a task which she is slowly realizing may be impossible. G. has asked her to discuss problems with B. In her own mind, however, the problems aren't really about B. but rather about herself and her husband. Even the problems she comes up with, such as eating, don't seem to be problems anymore, since things have changed. Other interpretations are of course possible.

At this point, D. confesses uncertainty about her task:

And uh I wasn't I wasn't sure just what you were interested in doing. Uh Bob K- ((her therapist)) told us to call you if we were interested in working with you and just to be able to work with you and have any part in what you were doing seemed like a very fine thought to us.

To which G. replies:

Well, that's OK by me. Now we have a project at the VA with outside finances actually that pays for the film from the Macy Foundation. We're studying the disruption of communication between parents and children, trying to

get some idea of the various gambits that the two sides use, in trying to get together or, the degree to which the gambits separate them or bring them together. There's very little been done, actually, on the actual natural history of what does happen between parents and children. I mean a thing like that "Three Families" film. Nobody else has done a film like that that I know of. It's very obvious, it's very accessible, ready to do, and most of what is said about parents and children is on somebody's report of what happens. So, we're trying to get in and do the natural history of it a little.

This interchange is not recorded on film, since the film rolls were probably changed at that point. Note that this clarification by G. describes the goal as one of recording natural mother-child interaction and not as one of asking mothers about their children. Yet, with B. off playing by himself or outside or watching TV during most of the time when this film was made, the actual task becomes one of asking D. about B. No attempt is made to call B. in to stay in front of the camera.

D. replies that she knows lots of patterns and routines, but when asked by G. to be specific ("for example...") she suddenly can't recall any. She describes the "bedtime situation" as an example. Referring to B. as "it", she says that when "it" has been a monster all day, it can turn sweet just at bedtime, which she sees as "a definite attempt to break up a relationship between us, between my husband and myself". (This clarification that "us" refers to D. and L. and not to D. and G. gives weight to the interpretation that D. perceives B.'s offer of the pillow and request for help with the airplane as his attempt to break up a relationship between D. and G.).

D., now toying with a straw purse, mentions the problem previously referred to of B. and she both competing for L.'s attention at the end of the day, especially when she has been home alone with B. but with

"no human companionship". She catches herself and says, "...sort of a nasty way to put it", but G. comments "but these are the truths after all" and adds that his wife might say the same thing. D. follows with an ambiguous use of "he":

It's particularly hard on L. who has come home and is tired and would just as soon sit down and read his paper or something and he's real good he he won't do this. He, I think, goes beyond the limits of human endurance.

At this point B. reenters the room to report that "Johnny" did something bad and presumably should be punished. D. rasps under her breath, "That's the problem" and growls, identifying the kid next door as a new problem to discuss. But here too she changes the focus to the boy's parents and says that the kids are taking out the parents' hostilities. She goes outside to tend to Johnny and returns. When D. and B. have returned, he asks his mother about dinner. She consults G. about the time for dinner. B. asks if Mickey Mouse is on TV and, when D. says yes, he whoops "yahoo!". He runs toward the TV room, apparently.

D. comes up with another problem for G.:

...one standard thing too that's a real problem and in this thing that occurs to me is this problem which hasn't been nearly as evident today as it usually is as when I have company and want to talk and don't want to be interrupted this is the time when everything goes wrong, everything.

She walks into the TV room to tell B. that Mickey Mouse isn't on yet but will be on in a minute and returns to tell G. about another "gambit" of B.'s: "...one of the pushbuttons at the moment" is

the way B. tells her "you're wrong". Apparently D. is saying that B. gets her goat by telling her that.

D. returns to the problem of B. interrupting her when she is busy or visiting with friends, and adds that she's given up doing much work until B. is in bed. At this point G. asks D. to report on B.'s behavior in "outside situations" such as "camping" or "restaurants". D. replies that he is good, but is sometimes a problem when they visit friends if he knows them well and feels "at home." She suddenly switches back to the topic of natural history filming of families with:

But in this or you may get this other family
as a matter of fact when they get themselves
straightened out if they're still looking for
people because Bob has talked to them too and...

and starts to describe the other family. D. and G. laughingly agree that they're the ones that really need to be filmed. She mentions in quick succession that B. is good with these friends, to talking about his problem of not wanting to go to sleep, to saying that at the age of 4½ he has already crossed the country seven times, and concludes:

I don't know I uh maybe it's just cause I'm in
a good mood today or maybe it's cause it's Thursday
and you should have caught me on Friday ah
things seem to be better and...

Here a neighbor woman comes in and D. goes off to the kitchen. At this point the first reel of tape is taken off the recorder and replaced with a new one.

In the next reel of tape, D. seems to have no success in her continual search for problems and gambits for G. She states that her therapist has seen B. and thinks him all right. In the "cigarette scene", G. states that B. is not retarded and seems very bright and advanced for 4½. D. agrees and mentions B.'s telescope hobby as evidence of his abilities and concludes, "I really don't think there's very much wrong with him." G. agrees and says, "...then there's nothing to worry about, no, no." After a few minutes, G. instructs the cameraman to stop filming until B. comes back. The tape recorder continues to run. D. briefly mentions the theme of an only child but when a train passes and drowns out all talk, the topic changes to that of trains. By now the "interview" proper is over. D. and G. discuss the Mickey Mouse and Walt Disney television shows. And now, ironically, D. produces a clear gambit which G. picks up later in an interaction with B. on another day -- the story of the puppet "Tuckie". B. uses his little dog puppet to speak for him and intercede for him with an angry D. when B. is ready for bed and can't ask forgiveness straight out. D. says it works every time, but perceives B.'s gambit as a manipulation. She describes the gambit in great detail. The CM, released from his filming task, enters the conversation (another clue that the interview as such is over) with a story of his brother's imaginary playmate. D. says that she and L. have set up the condition that they will play with B. only if he can seduce them with games interesting enough for adults. The tape ends with a conversation about schools.

This brief, biased, and highly selective description of the audible interaction has been included for two reasons. The NHI transcript does not include all of the material on the audio tape, and important information

about the participants and their relationships was lost. Second, there is some doubt in my mind about the interaction as an interview -- did this interaction meet the criteria which would establish it as an interview in contrast to a conversation or some other performance? There are a great deal of switching from one topic to another, obvious misunderstanding about the purpose of the interview, and very little evidence of mother-child (and almost no evidence of mother-father) interaction in this film. When this film is considered without reference to the other films made of these people: the scene of L. bathing B., the informal party, the dinner-table scenes, for example, conclusions about voice base and body base will probably be made incorrectly.

I have tried to point out problems of the extent of a corpus and of the size of contexts here, using this description of an interaction as an example.

9. Kinesic transcription: a notation system for "micro-kinesic" transcription.

A. Level of analysis.

These kinesic symbols are intended to be preliminary, tentative, preanalytic, and potentially useful for cross-cultural research. They are based on Birdwhistell's system for the recording of "kines" reported in his Introduction to Kinesics (1952) and were developed for the tiny corpus of the first 600 frames of the "Doris" film (GB-SU 5). No test of applicability of these symbols for notation of behaviors performed by members of other social groups has been made beyond casual viewing of ethnographic films. I have tried wherever possible to avoid such ethnocentric terms as "head nod" in favor of dimensions of motion.

B. Position vs. motion.

Any notation system for the recording of body motion behavior will emphasize either motion or positions. Positions include the holding of a body part; raised brows, tilted heads, crossed knees, and smiles are positions in the sense that body parts are moved to some configuration and then held there for a time. A notation system emphasizing motion, on the other hand, stresses the directions of vertical, horizontal, and lateral movement and considers "position" to be the motion of "holding". The International Phonetic Alphabet and other phonetic notation systems use symbols for positions and diacritics for secondary motions. Some researchers studying body motion prefer notation of joint motions of pronation, supination, and so on.

I suspect that an "etic" kinesic notation system ought to stress dimensions of motion rather than positions. Since we learn to perceive body motion in terms of "emic" units, the danger of ethnocentrism in setting up any notation system which involves positions is great. Brow raises, head tilts, knee crosses, and smiles may well be emic units for our own social group but not for others. A transcription system which forces the researcher to see in terms of motion could serve as a useful corrective to this tendency to force familiar units onto new material.

The system given here is a compromise, using both position and motion. Position and motion could be distinguished by the use of arrows with tails for positions (see for example the line for head positions) and tailless arrows for motion (see the line below for head motions). The system would be improved, I think, if only arrows with tails were used and if only motion rather than position were indicated. An additional symbol for "holding", such as a series of dots linking arrows, might be added. If a motion-only notation system were developed for "etic" or "micro-kinesic" transcription, then "emic" transcription would have to add symbols for positions referring to proven units or ranges of body motion.

3. Perspective

The symbols here indicate motion to the left or right and up or down from the subject's point of view. Thus if the filmed subject were seated facing me, the subject's left hand would be to

my right. I would transcribe motion to my right but the subject's left as leftward motion.

4. Applicability.

This notation system must be tested anew on each corpus and changed and expanded as proves necessary, just as early phonetic systems had to be expanded. The basic division into body parts may well be ethnocentric, as Birdwhistell pointed out in 1952. Members of different social groups may divide the body in different ways. Note also that the corpus used was twenty years old and that one of the persons transcribed may have used motions indicating mental disorder.

5. Baselines.

The body positions labeled "n" ("normal") and the "neutral" stick figure are entirely arbitrary. Since the initial scene of the "Doris" film has three seated persons, I chose a sitting position as baseline. . I also attempted to incorporate symmetry, giving all limbs a range of three degrees motion from "n".

6. Use

The student should use this notation system primarily as a guide to help him see. Ideally, the student would have a print of the "Doris" film, audio tapes made on that visit, and a copy of the NHI written materials at hand. An analysis projector would prove invaluable. Training in descriptive linguistics is highly recommended.

Prints may be available from Eastern Pennsylvania Psychiatric Institute in Philadelphia. Existing prints are several generations removed from the originals, which were lost. Dr. Norman McQuown at the University of Chicago also has a small library of prints and audio tapes, but these materials are also quite old. One solution to the problem of availability might be to record one of the "Doris" film prints (GB-SU 5) on videotape.

Training in descriptive linguistics is not always easy to obtain. The Summer Institutes of Linguistics provide rigorous training in phonetics, phonemic analysis, and grammatical analysis. Note that the approach used at the SIL does not insist on a rigid separation of phonology and grammar. Compare Chapter Two of the NHI by Hockett and Kenneth Pike's Language in relation to a unified theory of the structure of human behavior (1967 The Hague: Mouton). The basic descriptive linguistic assumptions of units and hierarchy and methodology are retained

Write to:

Summer Institute of Linguistics
International Linguistics Center
7500 W. Camp Wisdom Road
Dallas, Texas 75211

No previous linguistic training is required for the first-year course. The SIL program was established to train Bible translators who come from all walks of life. Theory and practice are well integrated.

KINESIC SYMBOLS "ETIC" LEVEL

I. The head

- h neutral position. An imaginary straight line could be drawn vertically through the center of the head to the center of gravity of the chest area. Assume head is facing "forward".

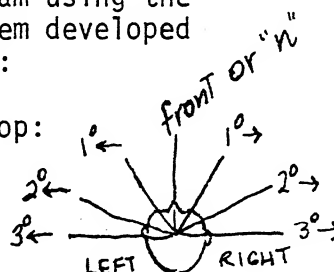
POSITIONS

LATERAL
DIMENSION

$h \rightarrow x^0$

turned to the subject's right side. I am using the "clocking" system developed by Birdwhistell:

seen from the top:



(1°→) means 30 degrees or one o'clock to the subject's right, for example.

For finer distinctions, you can add "minutes": 1°30" means one-and-a-half "hours" to the subject's right. Alternatively, you could simply use degrees, estimating the angle of turn in a geometric system of 360° for a full circle.

$h \leftarrow x^0 y$

turned to subject's left side ($x^0 y$)
(NOT observer's or cameraman's left side)

MOTIONS

→ - - →
or > - - >

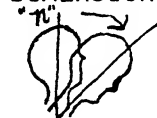
← - - ←
or < - - <

ANTERIOR/
POSTERIOR
DIMENSION

$h \downarrow$

Anterior: head "lowered" frontward.
As chin nears neck, top of head describes a semicircle forward-and-down.

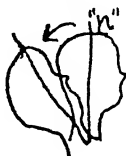
↘ - - ↘



$h \downarrow$

two degrees anterior, "far forward"

↘ - - ↘



$h \uparrow$

posterior: head moved both back and up in semicircle

↖ - - ↖






$h \uparrow$

two degrees

















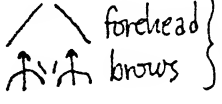



↖ - - ↖

Note: the division between position and motion may well be unnecessary; position could be thought of as the motion of 'holding'. Position may be emic, motion etic.

(The head, ctd.)

	<u>POSITIONS</u>	<u>MOTIONS</u>
OBLIQUE DIMENSION	 head tilted diagonally to subject's right (called "cocking" in Birdwhistell).	$\nearrow - - \nearrow$ or $\nearrow - - \nearrow$
	 head tilted to subject's left.	$\nwarrow - - \nwarrow$ or $\nwarrow - - \nwarrow$
RAISING/ LOWERING	 whole head raised vertically, away from neck/shoulders.	$\uparrow - - \uparrow$ or $\wedge - - \wedge$
	 whole head lowered vertically	$\downarrow - - \downarrow$ or $\vee - - \vee$
JAW THRUST	 jaw thrust forward	?
	(h) (jaw pulled in. I have not yet seen this, but it's theoretically possible)	?


2. Forehead and Brows


	brows held in "knit" position (This ought to be further broken down)	
	brows held in one-degree "raised" position	 "raising" or 
	single brow held in one-degree "raised" position (right brow)	
	two-degrees brow "raise"	
	one- and two-degree brow "lowering" positions (theoretically possible for single and for both brows)	 "lowering" or 
	medial brow "raise"	
	lateral brow "raise"	 "raising" of one part of brow or 
	medial brow "lower"	
	combination: "raised" and "knit" brows	
	Forehead: horizontal furrows	 } combination example
	vertical furrows	
 or 	diagonal furrows	


3. The eyes and lids


Here the position/motion distinction is abandoned.


Lids: in this system eight levels of lid closure are available, ranging from totally closed to totally open, with degrees of $1/8$, $1/4$, $1/2$ and so on in between, implying upper lid closure. Sample notations:


 closed lids


$1/8$  $1/8$ closed

$1/4$  $1/4$ closed

$1/2$  $1/2$ closed

$3/4$  $3/4$ closed


 lids pulled away from eyes, overwide

 lower lids raised


$1/4$  eyes "slitted"

 lateral constrictions

Indications of eye focus are noted in writing, although such focus is often extremely difficult to determine. For example:

$1/4$  $1/4$ closed, focus on "Gregory"

Indication of the direction of gaze is also noted in writing, as for example:

 $1/8$ closed, focus on "G", to her right, level

The "neutral" eye position assumed is one of looking straight forward, relative to head position. The absolute direction of gaze for one person's head, then, will be different if his head is at 1 o'clock right than if it were in "n" position.

A wide range of other notations concerning eyes can be made. Eyes may have wet or dry surfaces, seem yellowed, be glassy, be bloodshot, be turned up with the whites showing, be squeezed in by lids, be rolled, and so on. These conditions and behaviors of eyes were not in the small corpus I used, but can easily be added to this very tentative notation system as needed.

4. Nose



I made no notations for noses per se, since in this small corpus the noses seemed to stay "neutral". Birdwhistell has made several distinctions between positions of noses and nostrils, however. Note that nostrils may be flared or squeezed in, for example. The tip of the nose may move during speech. The sides of the nose can be pulled in. Sounds made through the nose should be included under paralinguistics.

5. Cheeks

Cheeks are particularly difficult to bound: where does cheek end and mouth, eye, nose, temple, or jaw begin? The distinctions made here are those I saw in a very small corpus. These distinctions, like all of the distinctions made by this system, are anatomically very unsophisticated. As Dr. Fred C. C. Peng has indicated (1977, personal communication), the science of body motion communication analysis will not proceed either far or fast until a basis of "kin-etic" notation which is anatomically sophisticated has been established, just as linguistics required a sophisticated articulatory phonetics.

|| neutral cheeks. This differs for each person. While Birdwhistell distinguishes between tense and lax muscles, I have not yet learned to see the difference (especially from the old film prints I used) and did not include that dimension here.

→(← cheeks sucked in

(←→) cheeks puffed out

/\ slight folds accompanying lateral mouth stretch

∪ "smile" folds

∪∪ second-degree "smile" folds

△ nostril folds

6. Chin and jaw

Again there is a problem of boundaries: where does "chin" end and "jaw" begin? While some people move chin-and-jaw as a single block, others move the two independently. The notations here were developed from a single corpus and may well have to be modified.

h↓ jaw thrust out

⊥ jaw dropping (Note: this is not necessarily totally redundant with speaking.)

⊥↑ jaw raising

↔ jaw lateral motion

Chin and jaw, ctd.

↕ chin raise

↕ chin lower

↔, ↷ chin lateral motion

7. Mouth

== neutral mouth (differs for each person)

^ or ↑ opening lips

v or ↓ closing lips

↓ ↓ pressing lips tightly together

↓ ↓ even more tightly

↖ ↗ sucking in lips, at corners of mouth

↖ ↗ sucking in lips totally

↗ or ↖ raising corner of mouth

↘ or ↙ lowering corner of mouth

< == > or ← == → lateral stretch of lips

> == < or → == ← laterally constricting lips

⊖ rounding/pursing lips

⊖ or ⊖ tongue licking lips

⊖ or ⊖ biting lips





Other mouth and lip behaviors are of course possible. Lips can be curled. The tongue can push against lips from inside the mouth. Teeth and tongue may be exposed. Lips are often colored. Lips may be wet or dry, tight (tense) or full (lax). The integument may or may not be of a highly contrasting color compared to surrounding skin. Lip movements involved in speech may or may not be visually redundant.

8. Neck

||

neutral (different for each person). The ideal "n" neck position is visualized as vertically straight, but each person's baseline position will be different. For purposes of this notation, assume "n" of straight vertical, neither stretched nor compressed, neither tense nor lax, neither thrust anterior or backed posterior.


Neck, ctd.


-  vertically stretching
 vertically compressing
 anterior thrust
 posterior thrust


I have not yet seen a difference of tenseness or laxness of muscles, although Birdwhistell gives symbols for these in his notation system. They can be added as needed.


9. Shoulders

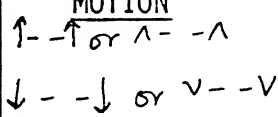


== neutral. Assume an ideal "n" of horizontally straight shoulders, neither rolled forward or back nor raised or lowered. Each person's actual baseline will differ from this ideal "n".

 POSITION
shoulders raised

 shoulders lowered


 shoulders rolled forward/down

 shoulders rolled back/up


MOTION
 e.g. ==  - - 


Note that this distinction between position and motion may be unjustified.

10. Trunk/spine


 neutral. Assume an ideal "n" of a person seated in a straight-backed chair with his spine touching the back of the chair from neck to buttocks. Each person's actual baseline will differ from this ideal "n".


 left tilt of upper body (assumed division at waist; may be ethnocentric)

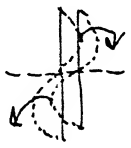
 left swing of hips

 shoulders-to-waist upper body bends forward

 forward swing of hips/pelvis

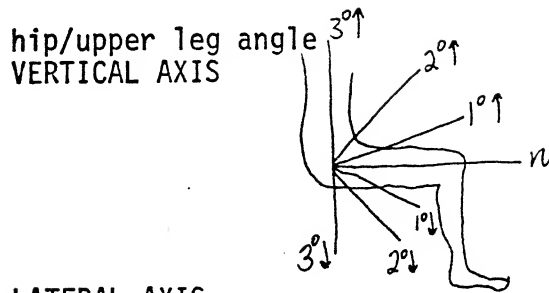
 chest thrust forward, spine curved

 spine curved concave

 spine "S" curve

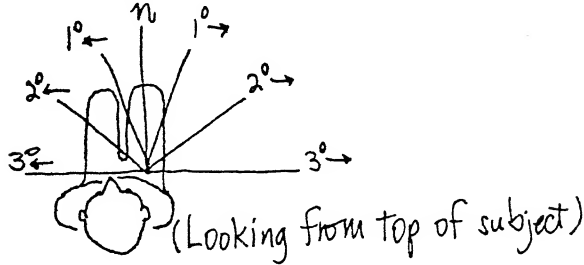
11. Limbs

LEGS



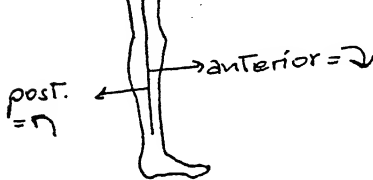
LATERAL AXIS

"n" = leg straight out in front of body, seated.
Clock motion from left or right of neutral:

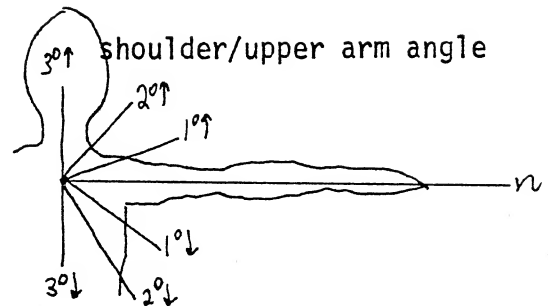


ANTERIOR/POSTERIOR AXIS

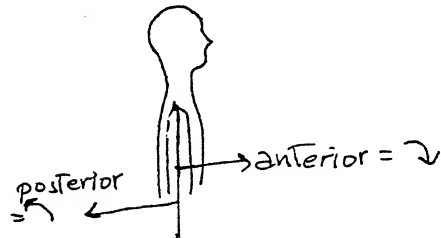
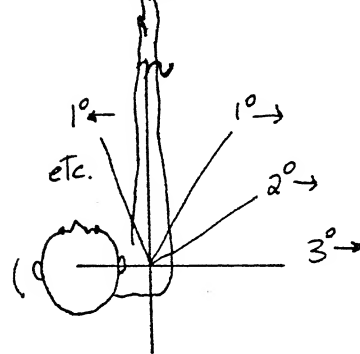
"n" = This is usually redundant.



ARMS



"n" = straight forward
Use motion "clock"



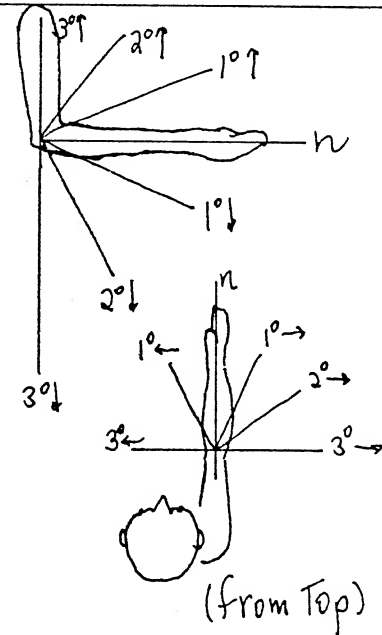
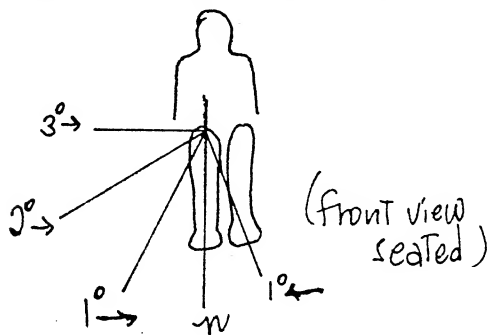
VERTICAL AXIS

upper/lower leg angle

"n" is right angle (seated)

if standing:

LATERAL AXIS for lower leg:

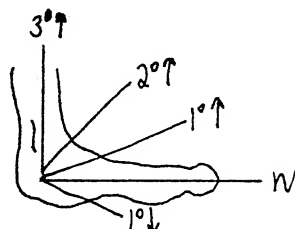
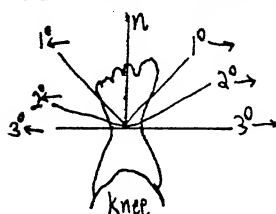


Limbs, ctd.LEGS

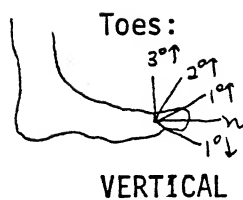
Twisting

medial twist of
lower leg

lateral twist

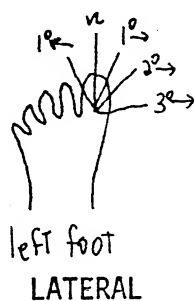
(front
view)Ankle angle:
VERTICAL DIMENSIONTop-down view
of left leg

LATERAL DIMENSION



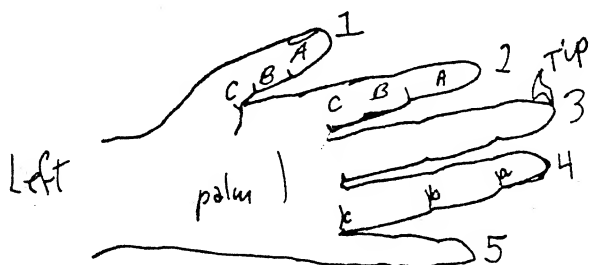
Toes:

VERTICAL

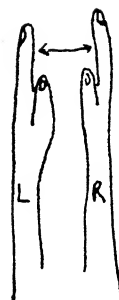
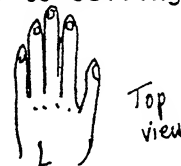


left foot

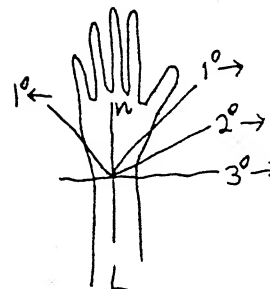
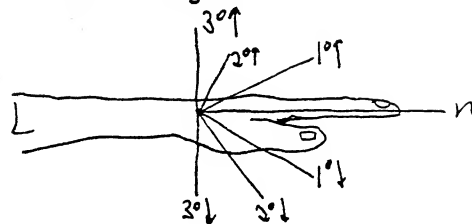
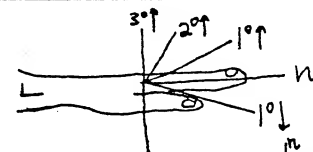
LATERAL



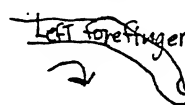
PARTS OF FINGERS

ARMSneutral: palm faces
mediallypalm twisted
up to ceilingpalm twisted
down to floor

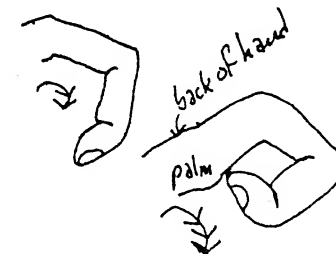
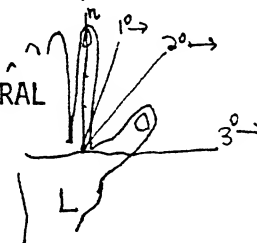
Wrist angle:

Fingers:
VERTICAL

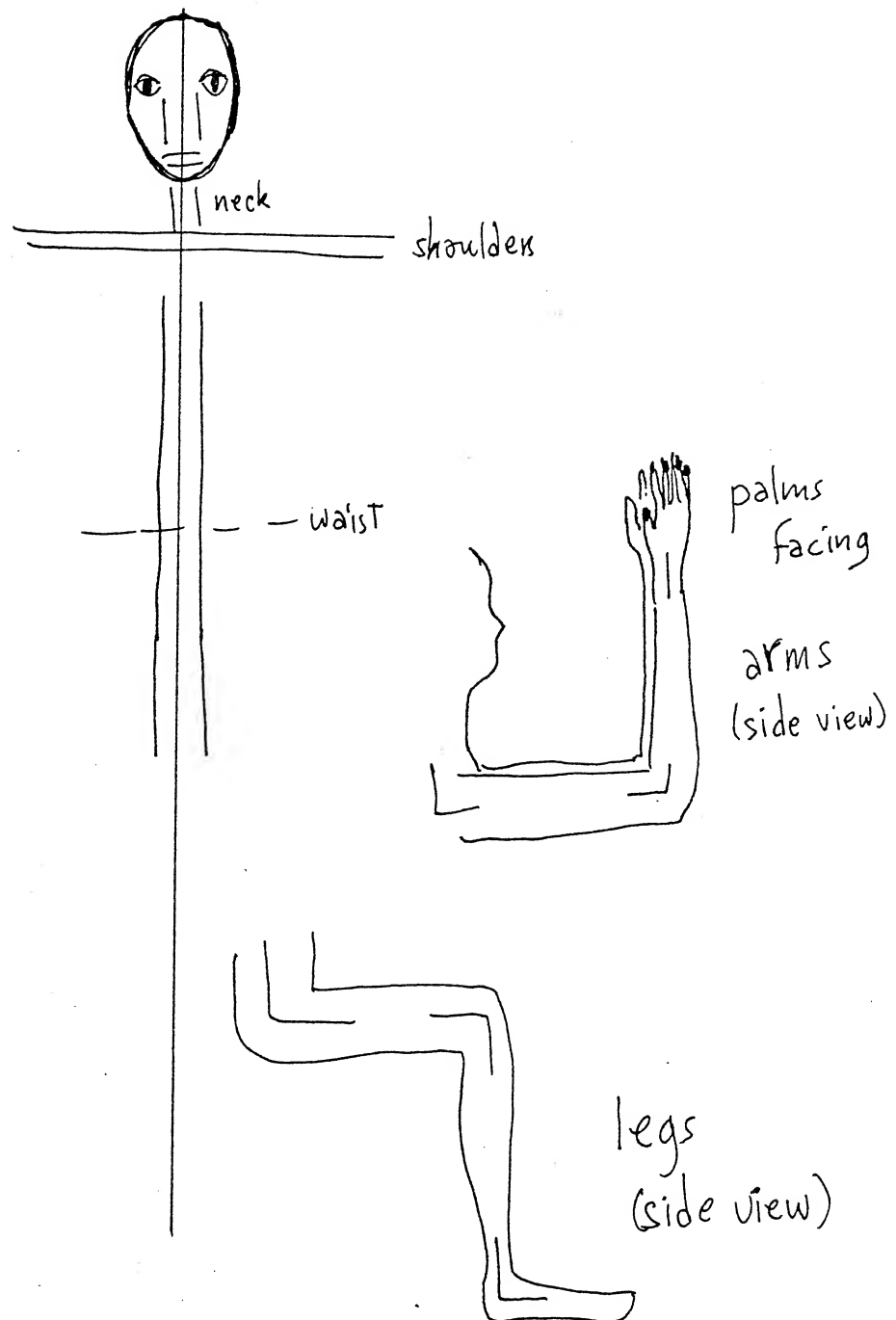
CURLING



LATERAL



Ideal "neutral" stick figure



10. Sample kinesic transcriptions on "etic" level, using this symbology.

Due to time limitations, I was able to transcribe only the first 150 frames of the "Doris" film using this notation system. I was not able to completely transcribe the corpus nor to perform the tests for emic units described in the chapter of the NHI methodology. If the reader can obtain a print containing these first 150 frames, he can use this notation as a guide to seeing .

Initial Positions

frame 00001

DORIS

head $\rightarrow 30''$

brows $\sim \wedge$

eyes ∞ nearly closed
right/down/unfocused

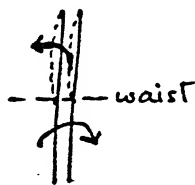
cheeks JL

mouth \longleftrightarrow

neck \updownarrow

shoulders \equiv

Trunk



arms

$30'' \uparrow; n$ upper arm $1'' \rightarrow; 1'' \downarrow$ palm down lower arm $1'' \uparrow; n$ LEFT ARM	$(1'') \downarrow; 2'' \downarrow; 1'30'' \rightarrow$ upper arm $n; 1'' \leftarrow$ lower arm palm medial (n) $1'30'' \uparrow$ RIGHT ARM
---	--

hands

LEFT HAND 1,2,3,4,5 extended very lightly 2 cigarette 2B/3B fingers 2 to 5 Touching	RIGHT HAND circles beer stein 2,3,4,5 tips touch front of stein; 1 circled back of stein 2,3,4,5 all slightly separated
---	---

feet

left foot Toes $1'' \uparrow$ shoe heel off	right foot (flat on floor? can't see)
--	--

POSITIONS

349

\rightarrow = subject's right

\leftarrow = subject's left

\curvearrowright = forward \uparrow = up


\curvearrowleft = posterior \downarrow = down



legs


left leg $30'' \uparrow; 30'' \rightarrow$ upper leg $30'' \uparrow; 1'30'' \rightarrow$ lower leg $1'' \downarrow; 1'' \leftarrow$ shoe heel off left leg crossed over right leg at knees	right leg $30'' \downarrow; 1'' \leftarrow$ upper leg $n; 30'' \rightarrow$ (can't see) lower leg $n (?)$ (can't see)
---	---

Initial Positions frame 0001

GREGORYhead 


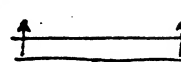

forehead n

brows n

eyes  or nearly closed

cheeks || n

mouth == n

neck shoulders  'squared'Trunk/spine  very slight posterior curve?
-- waist

arms

left arm

 $2^{\circ}45' \downarrow; 15^{\circ} \leftarrow$; (anterior)

upper arm

n; $1^{\circ}15' \rightarrow$

Palm n

lower arm - rests on thigh

 $30^{\circ} \uparrow$

right arm

 $2^{\circ}45' \downarrow; 15^{\circ} \rightarrow$; (anterior)

upper arm

n; $45^{\circ} \leftarrow$

lower arm

Palm n - rests on thigh

 $1^{\circ} \uparrow; 1^{\circ} \leftarrow$

legs

left leg

 $1^{\circ} \uparrow; 30^{\circ} \leftarrow$; (anterior)

upper leg

 $30^{\circ} \uparrow; 45^{\circ} \rightarrow$

lower leg

n (can't see)

right leg

 $1^{\circ} \uparrow; 30^{\circ} \rightarrow$; (anterior)

upper leg

 $30^{\circ} \uparrow; 1^{\circ} \leftarrow$

lower leg

n (can't see)

hands

left hand

1 n

1A x 2B

(Touching)

2,3,4,5 \rightarrow

cigarette between 2B/3B

right hand

2,3,4,5 \rightarrow around

matchbox

1 \rightarrow at other side of

matchbox

2-5 Touching

feet

left foot

assume flat on floor; can't see

right foot

same

Initial positions

frame 0001

BILLY

head $\frac{7}{h} \rightarrow 15^\circ$

forehead/
brows n

eyes $\odot \odot \frac{1}{8}$
front/level/unfocused

cheeks || n

mouth $\frac{7}{7} \frac{6}{5}$

neck
shoulders $\frac{H}{H}$

$\frac{2}{2} \frac{2}{2}$ "drooped"
slightly anterior

Trunk $\frac{1}{1}$
- waist
sitting on floor



arms

left arm

$2^\circ 30' \downarrow$; $2^\circ 30' \leftarrow$
(anterior)

upper arm

$1^\circ \downarrow$; $2^\circ \rightarrow$

lower arm

$1^\circ \uparrow$; $1^\circ \leftarrow$

Palm half between
n (medial) and floor

right arm

$2^\circ 30' \downarrow$; $30^\circ \leftarrow$; (anterior)

upper arm

$1^\circ \downarrow$; $2^\circ \leftarrow$

lower arm

$30^\circ \uparrow$; n

Palm n

hands : holding toy gun between
left hand right hand

1 n

2,3,4,5 n and
Touching.

1 separated from 2-5

1 n

2,3,4,5 slightly 2
on top of gun
Touching

2-5 are $30^\circ \rightarrow$

1 separated from 2-5

legs (full upper + lower legs on floor)

left leg

n; $30^\circ \leftarrow$?

upper leg

$2^\circ 45' \uparrow$; $3^\circ \leftarrow$

lower leg
twisted laterally

n

right leg

n; $15^\circ \leftarrow$?

upper leg

$2^\circ 45' \uparrow$; $3^\circ \rightarrow$

lower leg
twisted laterally

n

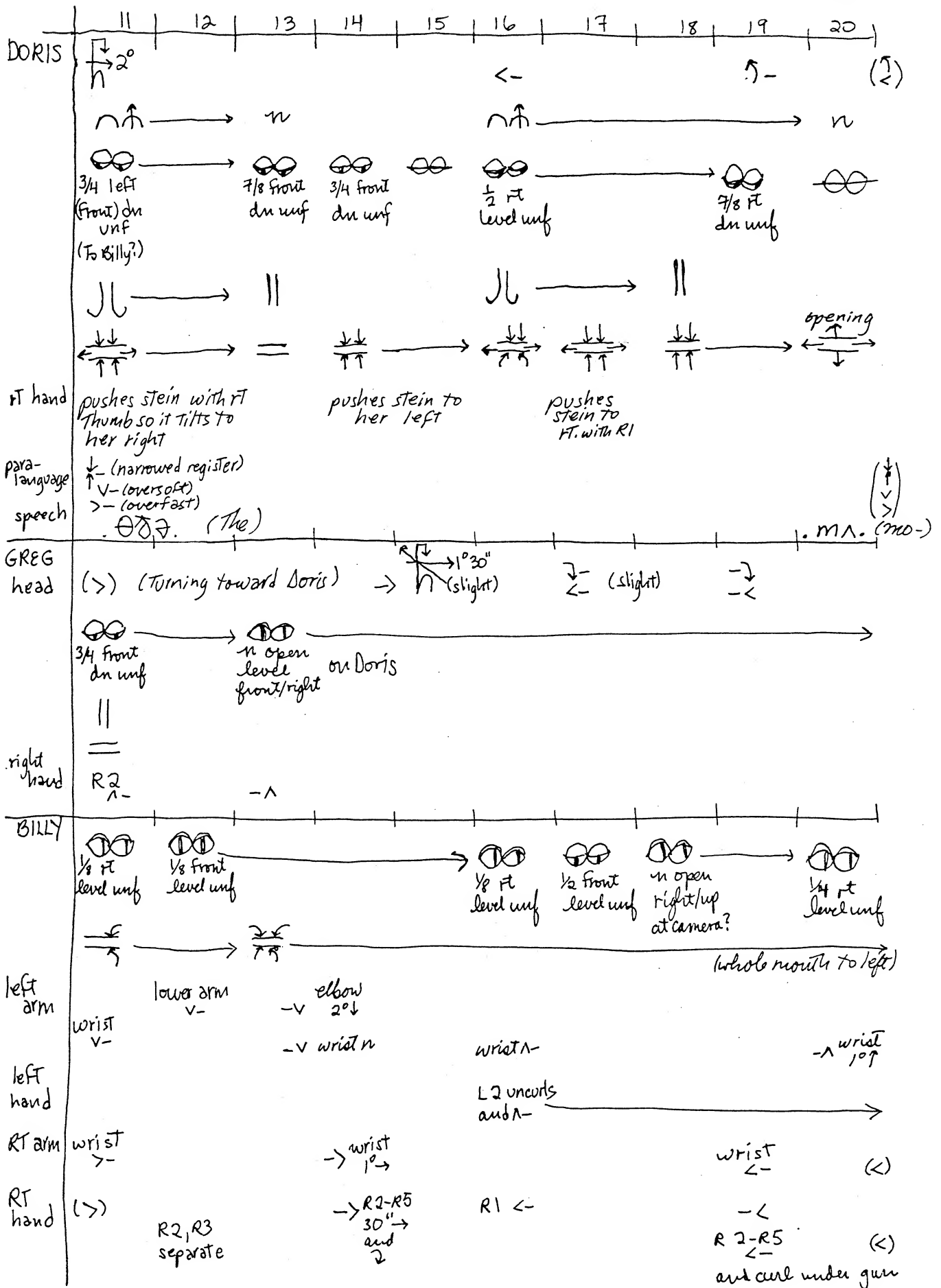
feet

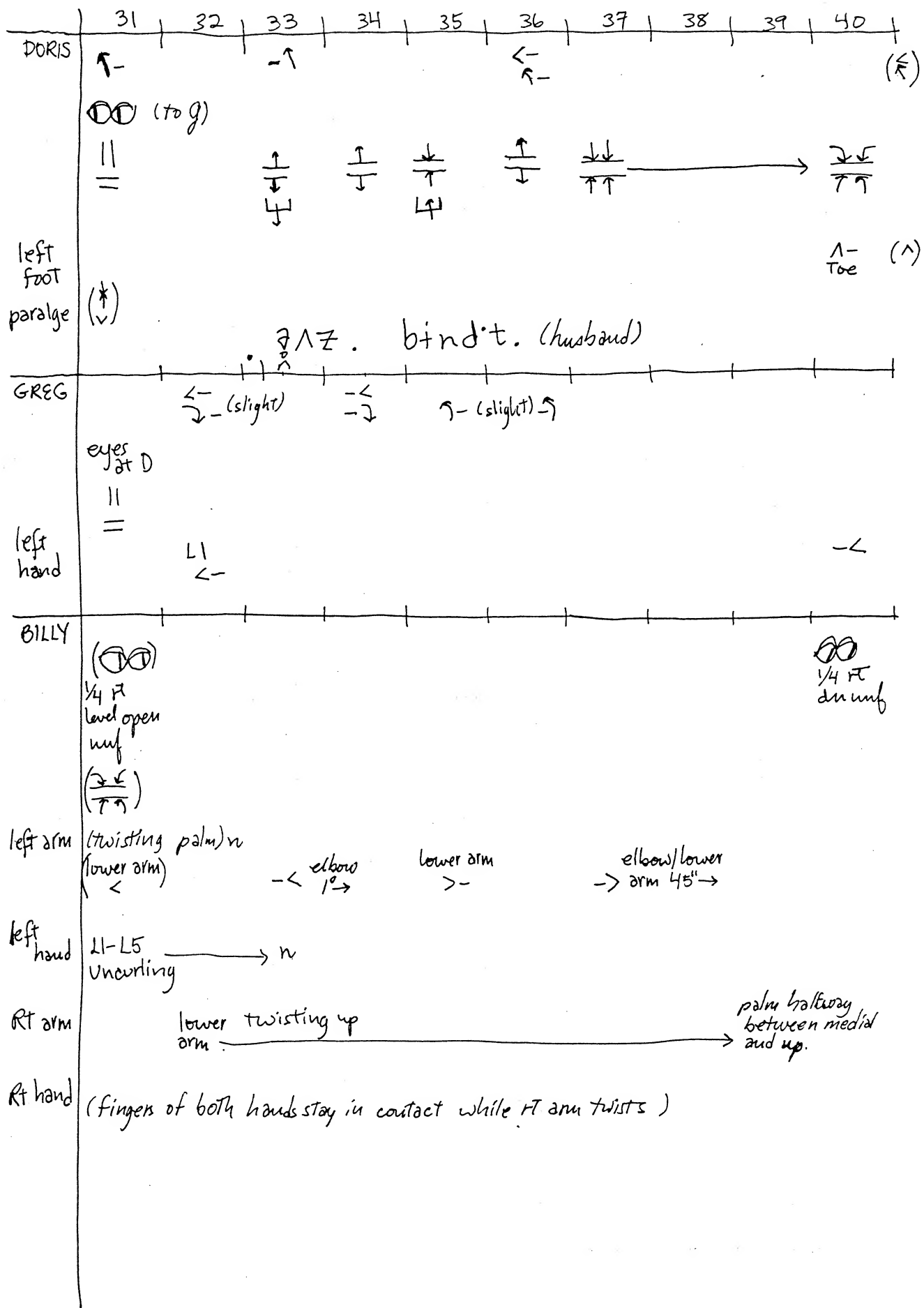
left foot

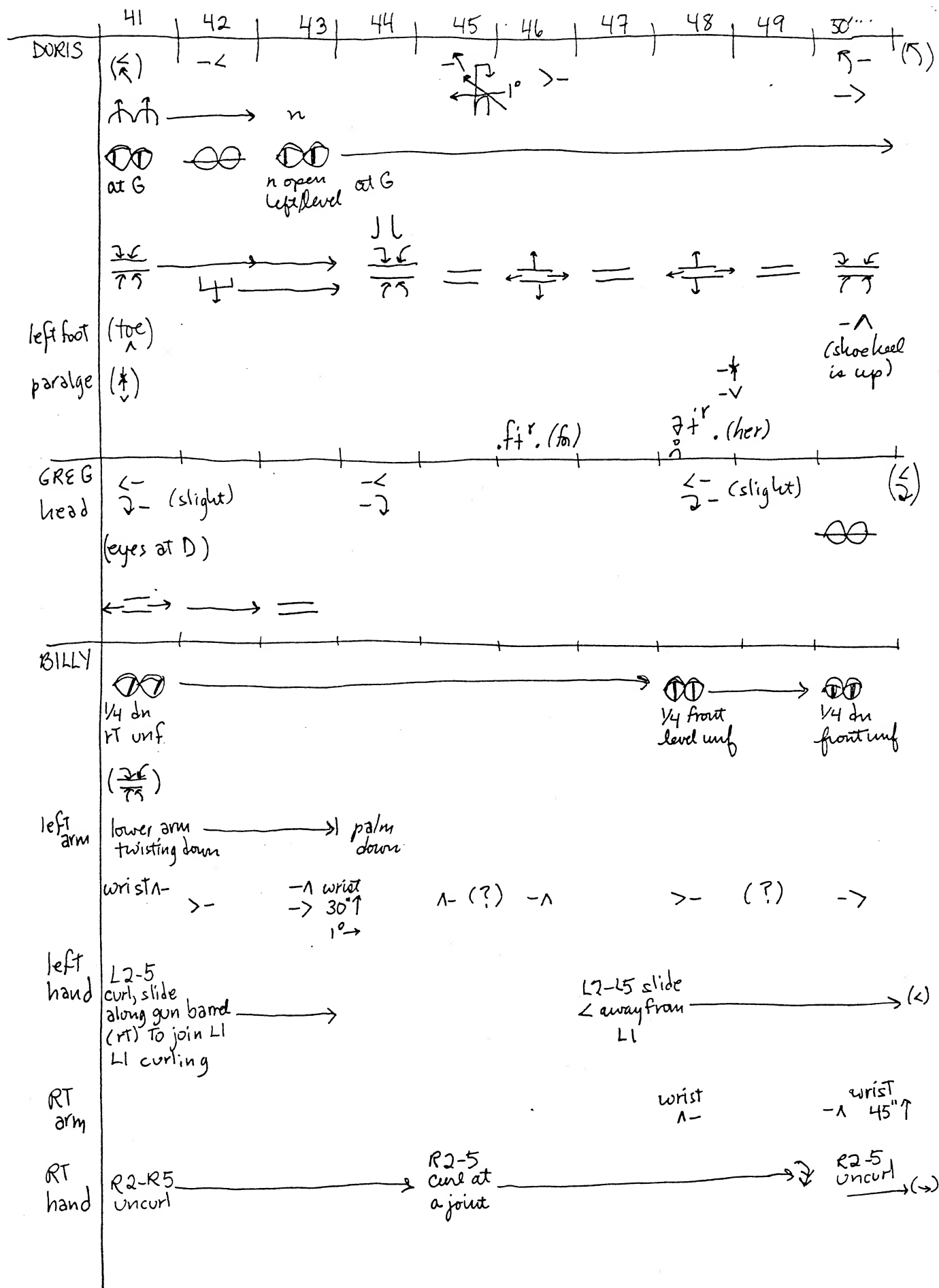
n

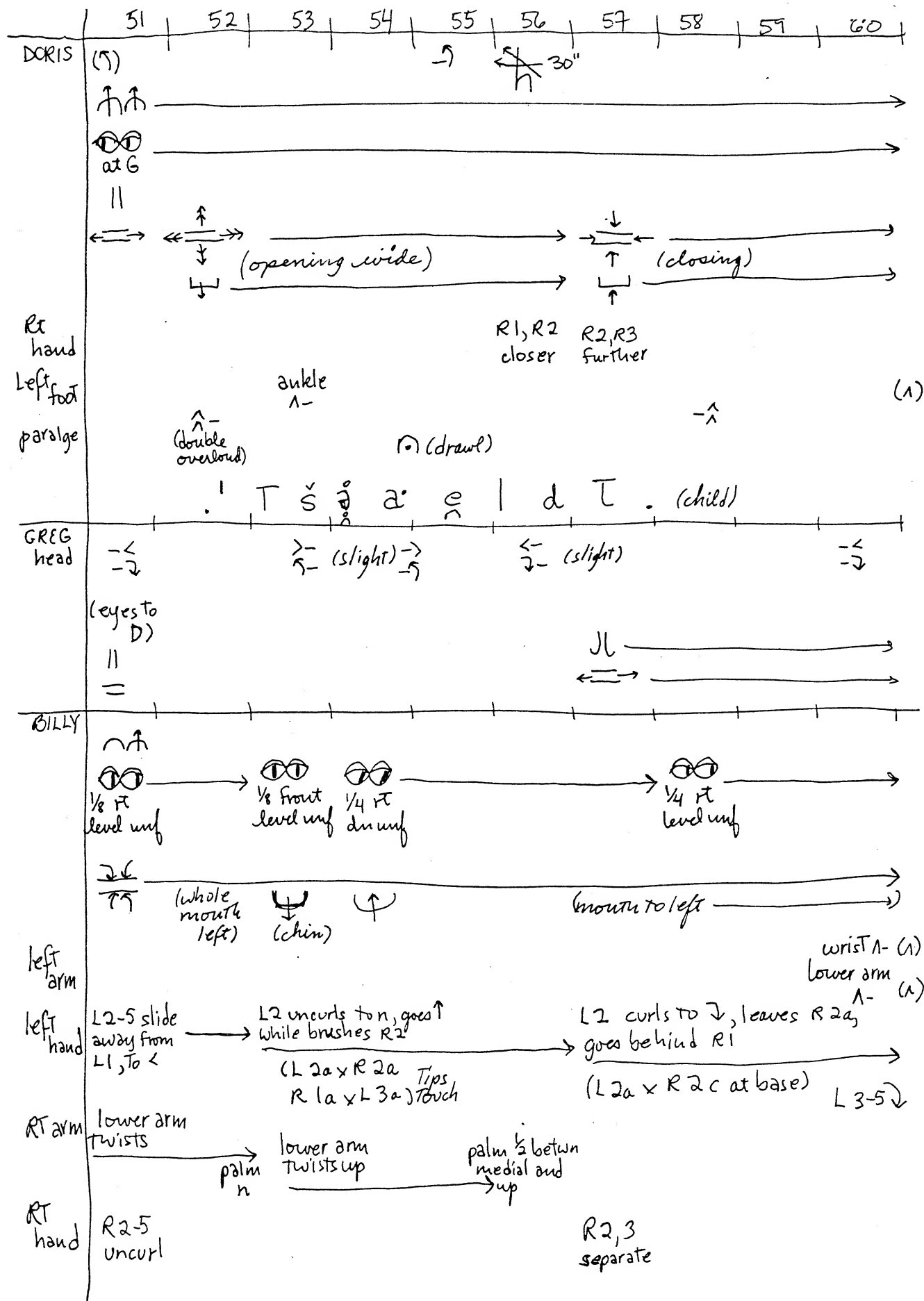
right foot

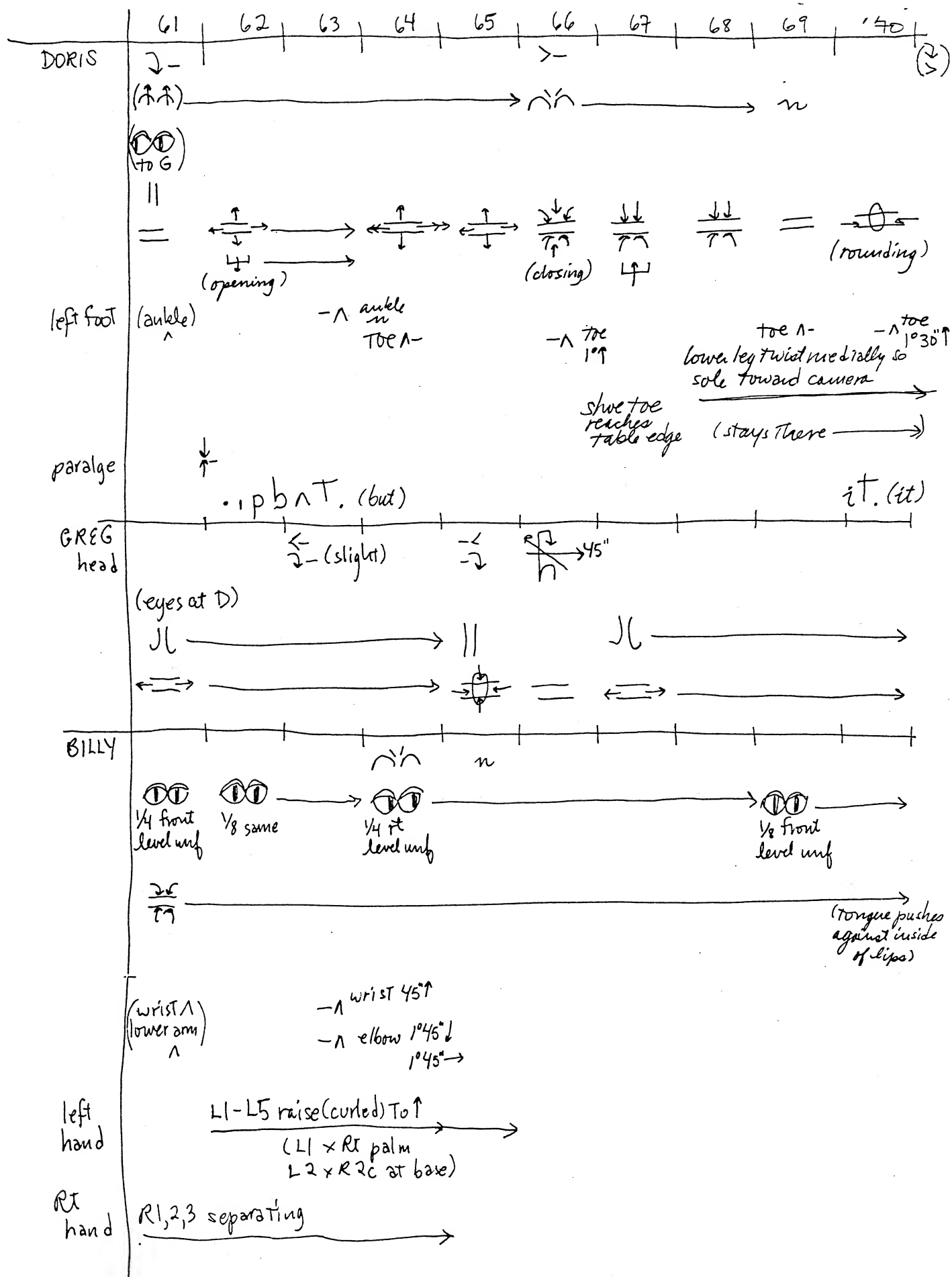
n



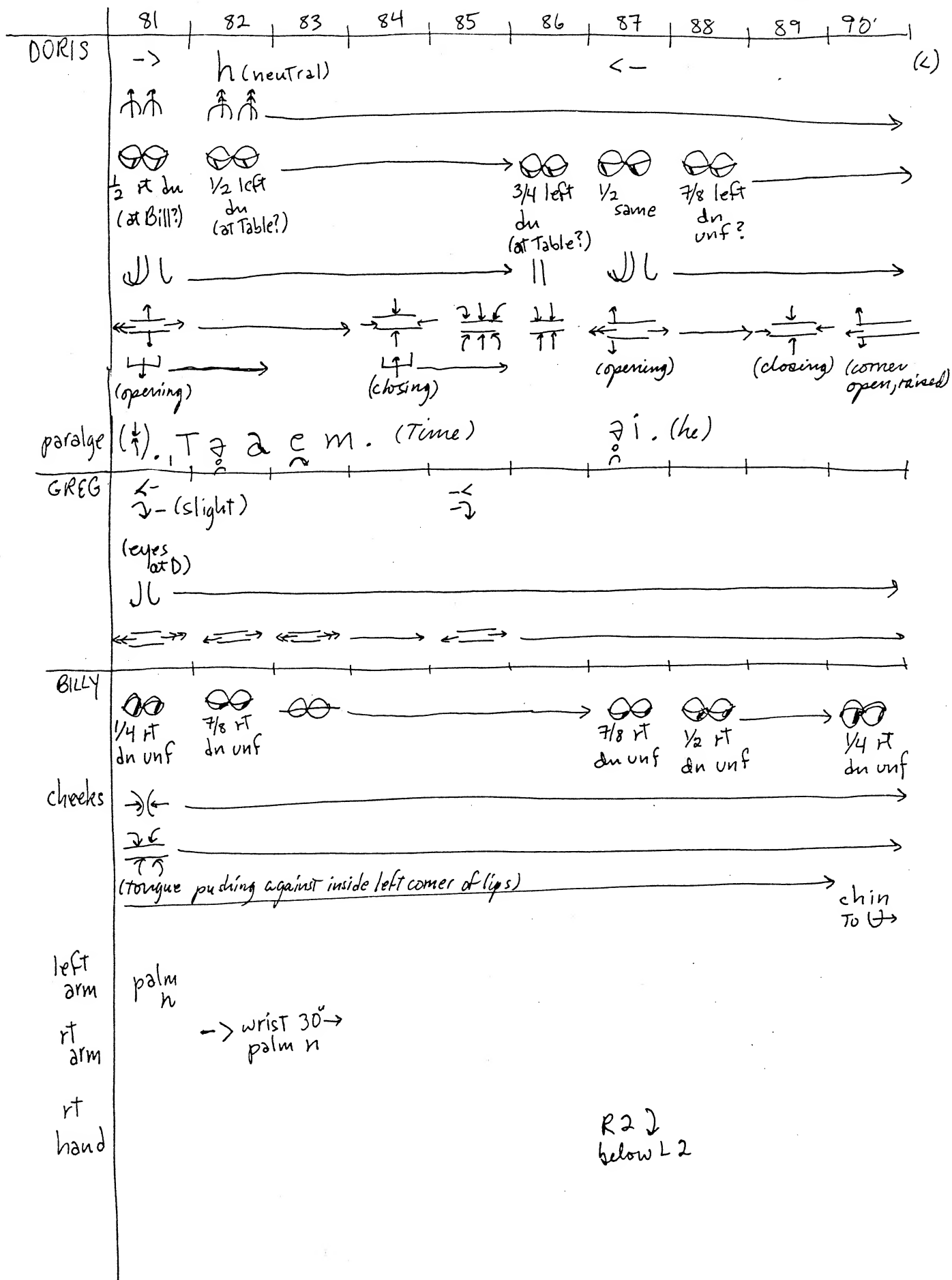


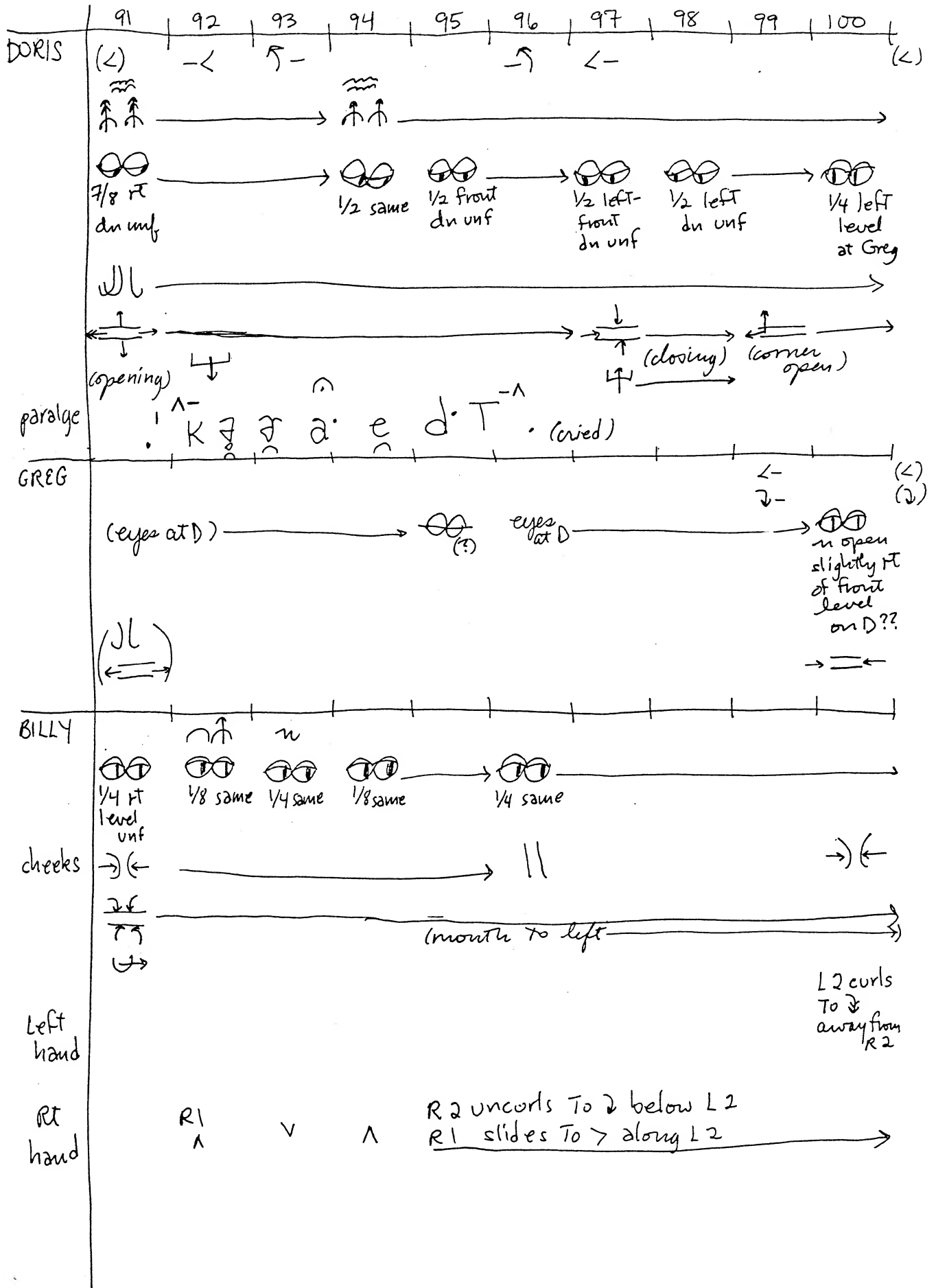






	71	72	73	74	75	76	77	78	79	80
DORIS	(>)	↑-	-↑			↓-				(>)





DORIS

111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120

> - (very slow) ↑ - (very slow)

↑↑ ↑↑ → n

1/8 left level To G 1/2 front dn unf 1/2 left dn unf 1/2 front dn unf

∧ || ∧ ∪ △

↔ ↔ ↔ ↔ ↓

↑ ↓ ↓ ↓ ↑

↑↑ ↓↑

rt hand

raise stein
^ -
wrist < -

(1)
(2)

paralge (↑) .fil. (feel) .gil. di. (guilty)

GREG (2) -< ↓ ↑ - (slight) - ↑ n

↑↑ n

1/2 front level unf 1/4 same (slightly rt) 1/4 front level unf 3/4 front dn unf

|| =

BILLY

1/4 rt level unf 1/8 front-right-up (at camera?) 1/4 rt level-up unf 1/4 front/rt dn unf 1/4 front level (or at camera?) 1/8 rt level unf

||

2c n c Tongue?

↑ n ↑

Tongue pushes on inside of lower lip Tongue pushes left corner

(2)

Trunk (<) L2 curling L2 ↓

left hd L2, R2 separate (L2, L1 curl around without touching selves or R1)

rt hd R2 uncurling and down R2 ↓ R1 > - (>)

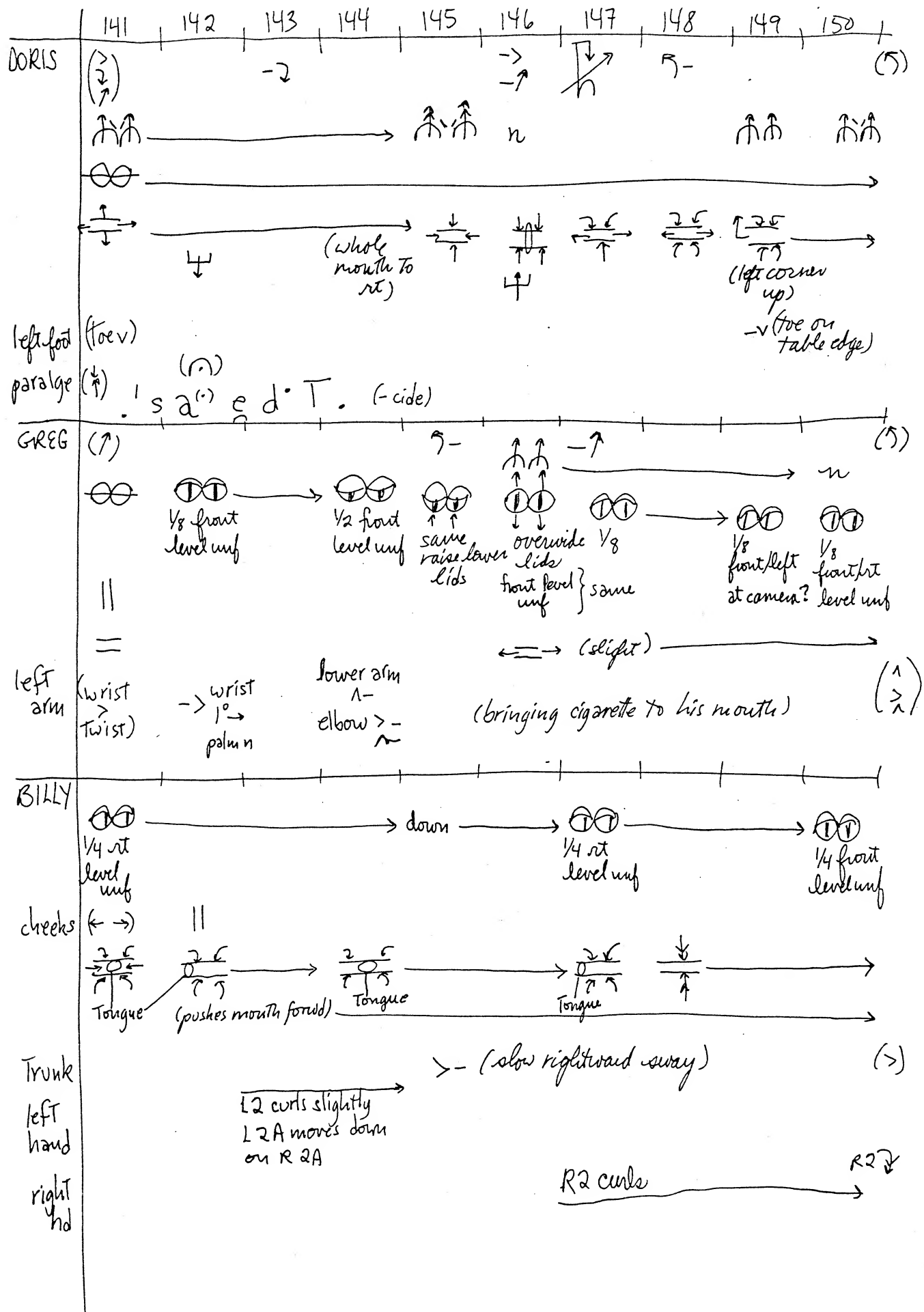
Handwritten notes and diagrams for a sequence of movements, likely a dance or exercise routine, organized into rows and columns.

Columns (Time/Measure): 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, (1)

Rows:

- DORIS**
 - 121: (slow)
 - 122: 3/4 front dn unf
 - 123: 1/4 front level unf
 - 124: 1/2 front dn unf
 - 125: 1/4 front level unf
 - 126: 1/4 front dn unf
 - 127: 1/4 front level unf
 - 128: 1/4 front level unf
 - 129: 1/4 front level unf
 - 130: 1/2 front dn unf
- RT hd**
 - 121: (A stein) < wrist
 - 122: n
 - 123: n
 - 124: n
 - 125: n
 - 126: n
 - 127: n
 - 128: n
 - 129: n
 - 130: n
- paralge**
 - 121: (A)
 - 122: . p b i .
 - 123: k a n
 - 124: z s . (because)
 - 125: i n h a l e s .
 - 126: a e . (J)
- GREG**
 - 121: 3/4 front dn unf
 - 122: ||
 - 123: ||
 - 124: ||
 - 125: ||
 - 126: ||
 - 127: ||
 - 128: ||
 - 129: ||
 - 130: ||
- BILLY**
 - 121: 1/4 rt level unf
 - 122: 1/2 rt dn unf
 - 123: 1/2 front dn unf
 - 124: 1/4 front dn unf
 - 125: 1/4 rt level unf
- Trunk**
 - 121: (<)
 - 122: (>)
 - 123: (>)
 - 124: (>)
 - 125: (>)
 - 126: (>)
 - 127: (>)
 - 128: (>)
 - 129: (>)
 - 130: (>)
- left hand**
 - 121: L 1
 - 122: > -
 - 123: > -
 - 124: > -
 - 125: > -
 - 126: > -
 - 127: > -
 - 128: > -
 - 129: > -
 - 130: > -
- RT hand**
 - 121: (R 1)
 - 122: > -
 - 123: > -
 - 124: > -
 - 125: > -
 - 126: > -
 - 127: > -
 - 128: > -
 - 129: > -
 - 130: > -

Diagrams: Various symbols and arrows indicating movement directions and sequences, including foot positions, hand positions, and trunk movements.



11. Preliminary analysis of transcription.

This sample "micro-kinesic" transcription does not satisfy the criteria of accountability, replicability, or verifiability stated by McQuown (1957) for natural historical analysis. Until a generally-accepted "etic" system of kinesic notation has been developed, which has been proven useful for work in a number of different social groups (and, ideally, for analysis of primate visual communication systems), and until the same corpus has been completely transcribed in a "kin-etic" notation, these criteria cannot be fulfilled. In addition, several researchers capable of this transcription must be available and must have access to the same corpus.

The transcription presented here covers only 150 out of 15,000 frames of film. Even such a limited transcription required a great deal of time. Physical limitations of eyestrain makes it necessary to limit kinesic transcription sessions to a few hours a day, especially when relatively old and grainy prints of films are used. This transcription also was made during a learning period, so that the very ability of the researcher to perceive visual phenomena changed during the period of transcription.

Given all these cautions, it is still possible to learn from this initial data, and to form hypotheses which can be checked on the larger corpus. Patterns of head motion, for example, are different for each of the three filmed subjects. "Doris", the speaker in this stretch, tends to move her head over wider ranges and take more time than "Gregory", the listener. She appears to follow her lateral turns with either anterior or posterior head motions, sequentially, while "Gregory" seems to overlap his lateral and vertical head motions. For example, her head goes left from frame 87 to frame 92, then anterior from 92 to 96, left from 97 to 103, and in a left-tilt from 103-105, in a smooth sequence.

She does perform components of head motion in different directions overlapping in time, as in frame 114 when her head starts lateral motion to her right, adding a posterior component in 116 while continuing the lateral motion, adding a right tilt component in 124 while continuing the other two kinds of motion, then stopping the posterior motion in 126, the lateral-right motion in 130, and all head motion by 146.

"Gregory", on the other hand, moves his head with shorter motions which combine motion in two dimensions, vertical and anterior/posterior. For both "Doris" and "Gregory", the only head motion component performed by itself is that of tilting (frames 31-33 for her and 117-118 for him). "Billy", in contrast, seems to hold his head relatively steady for this stretch.

If the differences in head motion indicated here are part of larger patterns, some tentative hypotheses might be constructed, such as: Are differences in head motion related to social class, gender identification, age-grades, or speaker-auditer roles? Are the cultural differences ("Gregory" is a native Britisher, "Doris" originally lived on America's East Coast) relevant?

Eye-brow raises can be seen in all three subjects. Mother and child appear to raise either one brow or both at a time, while the interviewer seems to raise only both, although this hypothesis is extremely tentative due to the poor quality of the film print I used. "Doris" performs a second-degree brow raise while neither male does. While all three perform "knit" brows (a far too global category), each differs in his or her tendency to combine brow raises and knits. "Doris" tends to combine the two, while "Gregory" tends to perform brow raises and knits sequentially, and "Billy" seems to separate the two in time.

Eye behaviors also differ among these three subjects. "Billy" typically keeps his eyes open with only a $1/8$ to $1/4$ lid closure. He closes his eyes only once in the 150-frame (about 6 seconds) stretch. "Gregory" and "Doris" close their eyes more frequently. Each tends to lower the upper lid to a position between $1/2$ closed and fully closed while looking downward, and to hold upper lids at a position ranging from $1/2$ closure to $1/8$ closure when looking in a level or upward direction; for these subjects, level of lid closure and direction of gaze in the vertical dimension may be redundant except when lids are $1/2$ closed. Synchrony of changes in direction of gaze is suspected for this adult pair.

Categories of cheek motion are very broad in this system. Shadows were used as clues to sucked in cheeks. Note that cheek folds may be independent of mouth stretches, so that the "smile" may be a complex of mouth, lip, cheek, and other components. "Billy" is the only subject to suck his cheeks in during this stretch.

Mouth and lip behaviors are very interesting. All three subjects engage in mouth-and-lip play in this stretch. "Doris" and "Billy" both appear to lick lips and expose the tips of their tongues and move their mouths laterally. "Doris" seems to open her mouth quite wide when giving paralinguistic emphasis to a word or syllable as if she used visual cues for additional emphasis. She also seems to speak out of the left side of her mouth during this stretch.

"Doris" tends to drop and raise her jaw visibly as she speaks. "Billy" seems to move his jaw and chin separately as part of his silent mouth play.

"Billy's" finger play has been illustrated in the series of film-tracings above. Both "Doris" and "Gregory" engage in hand motions. She pushes her beer stein back and forth, raises, tilts, and lowers it. He moves his right forefinger and wrist, left thumb, and at the end of the stretch is starting to raise his left hand with the cigarette to his mouth.

"Doris'" foot and toe motions are also interesting. She is wearing open-toed shoes with straps at the heel. Raising her toe results in lowering the shoe heel and lowering the toe results in raising the shoe heel. At times this motion results in the heel strap coming loose from her heel. She also moves foot and toes independently. She engages in a foot-twisting motion which exposes her sole to the camera. She may or may not be resting the toe of her foot on the edge of the coffee table.

"Billy" engages in a slow lateral swaying of his entire trunk as he sits. This sort of slow, steady motion cannot be seen when the researcher performs frame-by-frame analysis; it is necessary to run through the same stretch of film several times at different speeds in order to see motions performed at different rates.

Viewing the film at faster speeds, the researcher may begin to see larger patterns of body motion. After an extended period of frame-by-frame analysis, viewing the film at even 12 frames per second reveals not only different behavioral units but also behavioral "chords" of which the smaller motions are like single notes. These "chords" may be performed by one, two, or three persons.

One such tentative unit is here called "engagement/disengagement". It involves "Doris" and "Gregory", the interviewer and interviewee. This unit starts with one person turning the head and then the eyes toward the head and eyes of the other, who then turns head and eyes to meet those of the initiator. Mutual head orientation and mutual gaze is held for a time. Then one person disengages eyes and begins to turn the head away from the other, often lowering it, and the other follows by also turning head and eyes away from the plane of mutual orientation. This mutual aversion is held for a time until the next initiation of engagement.

When the researcher has tentatively identified such an interactional unit, he can test for both components and larger contexts. Does it make a difference if the interviewer or interviewee initiates engagement or disengagement? If the initiation of one is not responded to by the other, will the initiator redouble his or her efforts? Will initiator and first disengager be the same person? What other patterns of mutual orientation followed by mutual aversion can be seen in this interpersonal interaction? What correlations to "Billy's" behaviors can be found?

A second example of a larger unit is here called "Punctuation devices". This unit includes all of the behavioral equivalents used by these subjects to divide scene from scene. Such motions as "Doris'" foot and toe raisings and lowerings, her reaching forward to flick ashes into the ash tray on the coffee table, and her exaggerated shifts in position may function as punctuation markers, for example. In identifying such behaviors as punctuation markers, the researcher is making a claim that behavior patterns occurring before this marker differ in some describable way from behavior patterns occurring after it. A chart such as the following might be useful in showing such changes:

FIGURE VI-40:
HYPOTHETICAL INTERACTION CHART

PERSON 1	Posture A..... head left right left right foot up	Posture B..... up down
PERSON 2	posture A..... hand right.....
PERSON 3	posture A..... torso twist left	Posture B..... torso twist right

Here the changes in direction of motion of various body parts by different participants coincide at change-points marking boundaries to scenes in the interaction. Behavior patterns preceding this change-point are different from those following it. The researcher may take Person 1's posture shifts as his punctuation markers at the start of analysis, although further enquiry may show that Person 3's posture shifts function more reliably as punctuation markers.

12. Questions about psychological and pathological processes.

Another kind of question asked by the NHI team is related to the original focus on diagnosis of mental dysfunction through communicative disorders. Team members explored the area of symptomatic behaviors (deviations from the "baseline" behavior patterns of each participant) and tested hypotheses constructed by the psychiatrists. The reader is referred to Chapter 9 of the NHI for further information on this kind of question.

13. Summary.

This chapter has indicated some of the kinds of questions that can be asked when the methodology developed by the NHI team is followed. A series of film-frame tracings showing motions which appear to be "pointing" illustrated the initial grouping of similar behaviors which the researcher does prior to applying the tests for emic units. Tracings showing the hand and finger positions of "Billy" for the first 610 frames of the "Doris" film show "motifs" of motion which the researcher assumes to be patterned and related to other body motions recorded on the film rather than random or meaningless. The third section of this chapter consisted of film-frame tracings showing each of the three subjects looking in the direction of the camera as evidence of awareness of the recording equipment and technician. The next section, called "Interpersonal relationships", showed a nonverbal encounter of mother and child which is subject to several interpretations. A single tracing of interactional synchrony in the next section showed the kinds of behavioral simultaneities which can occur on a gross level between body parts of two interactants. Section 6 showed points of posture shift, mostly by "Doris", which may function as punctuation markers in the interaction. The next section showed the physical setting of the living room in which this film was made. The next section consisted of a prose description of the content of the spoken interview, including portions which were not recorded on film. Section 9 presented a revised notation system for "micro-kinesic" transcription, based on that developed by Birdwhistell, and the next section provided a sample transcription of the first 150 frames. Section 11 presented a tentative and preliminary analysis of that transcription. Section 12 indicated that questions about psychological and communicative disorders could also be asked, given this kind of data.

CHAPTER EIGHT

IMPLICATIONS FOR EDUCATIONAL RESEARCH OF THE NHI

As of today, we believe that communication is the only scientific model which enables us to explain physical, intrapersonal, interpersonal, and cultural aspects of events within one system.
(J Ruesch and G Bateson 1951, 5)

We have compared and contrasted two ways of thinking about human communication. One view, the "psychological" view, characterized communication as the process of transmission of information from one individual to another. The other view, the "social" view, postulated a multilayer, multimodal, group-level communication system relating members of a social group to each other and differentiating that social group from other groups by behavioral rather than purely biological differences.

These two ways of thinking about communication have influenced educational researchers. The definitions of communication taken from two prominent audio-visual textbooks (see page 14 above) show that instructional systems researchers have also been influenced by these two views. Those who adopt the "psychological" view, for example, tend to design systems in which information is transmitted from expert to student as efficiently as possible. Those who adopt the "social" view, on the other hand, concern themselves with information flow through a social group of teachers and learners involving several senses and different media.

The danger in distinguishing between a "psychological" and a "social" approach is that this distinction will be perceived as a dichotomy or set of oppositions and further identified with the dichotomies of reason vs. emotion, or mind vs. body, or nurture vs. nature. The opposition of "natural" and "social" frameworks is, according to Goffman, one of the most widely and deeply held beliefs of our culture (Goffman 1974). When "natural" is identified with "scientifically describable", and "social" is identified with "romantically felt", the tendency to regard "psychological" research as truly scientific and "social" research as merely descriptive and emotional is strong.

This study has attempted to show that both approaches are scientific in the sense of disciplined inquiry which results in new knowledge. The methodology of the NHI was described in detail in order to reveal the enormous amounts of training, disciplined looking and listening, testing, and checking which are required by one particular type of research conducted within the "social" point of view. In addition, such studies as the NHI require a careful statement of assumptions made about communication, social relations, and human nature.

For those who have patiently worked through the previous chapters, the most important question now is one of worth. What's the point of conducting a study such as the NHI when it requires an interdisciplinary team, expensive equipment, staggering amounts of time spent in transcription and testing, attention to barely perceptible details and the minutiae of human behavior, and when it results in such tentative conclusions?

1. Evaluation of the NHI study and approach.

The NHI study was a pioneering exploration of human social communication. As the first study of its kind, it resulted in professional growth on the part of team members, new theoretical developments in the fields of paralanguage and kinesics, and new methodological contributions. It offered a means of disciplined observation for not only human but nonhuman social communication patterns. The team members' own evaluations reflect this growth in theory and methodology:

Gregory Bateson: (anthropologist and communication researcher)

We have learned more about interaction as punctuated into contexts of learning and we have accumulated empirical data on the continuity and cyclicity of the double bind.

We have discovered empirical markers for shifting logical types and have found that such markers tend to be metacommunicative.

We have seen that both the digital analysis of 'pip' or 'bit' phenomena and the analogic analysis of total pattern or system phenomena are appropriate on every level.

We have experienced both the value of micro-analysis of the structure of short sequences and the usefulness of macro-analysis of the structure of total scenes.

We have both new information and new kinds of information on the resistance of systems to parametric change.

Ray L. Birdwhistell: (anthropologist)

Kinesics as a research area has been revived and a new macro-kinesic recording system has been worked out and tried.

We have been forced both into technological innovation (better film focus, better sound track) and into a recognition of the need for it (good color film, a fool-proof calibration system for coordinating sight and sound).

We have been obliged to explore the area of parakinesics and to devise a frame within which to describe parakinesic phenomena.

We have learned that the amount of the body involved in simultaneous language and gesture is large and we have begun to explore the extent to which they supplement and reinforce each other.

We have been forced to recognize that no single channel and no single unit within any type of channel by itself means any particular thing: what is conveyed must be discovered anew in each context. and whatever it is, though it may involve ambiguity, it never gives rise to contradiction.

Henry Brosin: (psychiatrist)

Our work has strengthened the assumption of psychic determinism: we have discovered system within system within system in multilevel homeostasis.

We have been provided with new tools for the study of group dynamics and their use has forced us to recognize new dimensions of complexity in group organization.

Our investigations have provided new support for social matrix theories of personality (and character?) (temperament?) development and have reinforced the conviction that items of behavior as such are never abnormal -- only constellations are.

We have been forced to suspect the artificiality of recognized psychological limens and to expand tremendously the area of sub-recall learning (of things which happen in as little as 1/24 of a second).

We have an entirely new conception of psychological time and a new appreciation of how much interaction takes place in a second of chronological time.

With Fromm-Reichmann we now recognize the possibility of still further restricting the working area of unspecifiable intuition: describable and communicable bases for psychiatric intuitions are now at hand.

We can now detect specifiable speech and body-motion behavior that confirms for us the adage that repression is the price of civilization and shows us the details of the mechanism for learning not to learn.

(All of the above quotations are taken from Chapter 10 of the NHI (McQuown et al 1971))

These evaluations of the NHI project by the research team members reflect their understanding that theoretical, methodological, and professional growth was achieved. Little was said, in these summary statements, about the nature of human social communication or the relationships among linguistic and kinesic communication. The traditional reports of statistically significant correlations are absent. The summary statements by McQuown, given below, give reasons for this lack of conclusions:

Norman McQuown: (linguist)

We have seen that although the general principles of behavioral analysis are the same for both speech and body-motion behavior, there are no two cultural systems with entirely analogous structures.

We have come to realize that we have no established base-lines for speech and body-motion behavior in any of our socio-cultural groups (none for children, none for suburbia, none for geographical areas), against which we might find it possible to measure individual behavior.

We have been forced to recognize that without comparative studies of speech and body-motion behavior in families which would give us some idea of the norms for such behavior and its range of variation, we cannot place the behavior of any one family along that range.

We have been obliged to develop the area of paralinguistics devoted to a systematic study of all those vocal phenomena which are separate from language, but in which language is embedded.

We have been brought to a realization of the need for new linguistic research into larger-than-sentence-size units, into spontaneous conversational materials, and into the variability manifest in the speech of members of a much wider range of social groups.

(NHI Chapter 10)

He stated that the provision of a transcribed corpus in addition to descriptions of theoretical assumptions and methodology allowed other researchers to replicate the analysis conducted by the NHI team and to relate all inferences to data. The problem is that any inferences

based on data in this corpus must be limited to the corpus alone until information on communication patterns of groups and sub-groups within the American culture has been made available. The patterns seen in the "Doris" family may or may not be representative of speech and body motion in the larger social group. The NHI team could make few conclusions because their study was conducted almost within a vacuum, at a time when fewer and fewer social scientists and linguists seemed interested in describing the patterns of communication in their own native social groups. There has been no study of similar scope to date. The difficulties involved in obtaining the necessary training were noted earlier. A final problem is the transcription itself, which presents transcription on different levels for different parts of the interview. Some sections are given as a verbal transcript using regular English spelling and excluding phonetics, phonemics, and paralinguistic. Other sections are extremely detailed phonetic, phonemic, and paralinguistic transcriptions. Other sections fall between these two extremes. The same variability is seen in kinesic notation, with relatively little fine-grained "micro-kinesic" transcription. No explanation of either the "micro-" or "macro-" level kinesic symbols is provided, and the two systems are not clearly related to each other, resulting in a symbology which is more like a personal shorthand notation system than a scientifically reported analysis. The researcher faced with such a transcript cannot easily learn to interpret it or to make inferences about visible and audible behaviors and their relationships from it.

In the view of members of the NHI team about their study, then, the greatest value of the study was its development of a methodology for the study of human (and potentially, for non-human) social communication consistent with explicitly-stated theoretical assumptions. The

greatest problem uncovered was the lack of knowledge about communication behavior patterns characteristic of members of this society. The greatest need seen was for both more studies like the NHI and for descriptions of speech and body-motion patterns, from both the "etic" and the "emic" viewpoints, among members of the social groups comprising American society. No conclusions about the relationships among visible, audible, and in other ways perceptible communication patterns ought to be drawn until such information is available.

2. Questions of applicability.

All researchers are faced with the question of the usefulness of their inquiries. Studies such as the NHI must also be evaluated in terms of applicability of the knowledge they produce. This question is difficult to answer because the study described produced theoretical and methodological advances rather than a body of knowledge or conclusions from data.

Given a research context in which adequate information about speech and body-motion communication patterns for a social group or more than one social groups was available, studies such as the NHI which describe and analyze human social communication behaviors on levels ranging from gross to fine-grained would produce knowledge about communication which could be useful in a number of fields. Teachers, for example, have long been aware of the fact that they rely on body-motion communication with their students for purposes of behavior regulation, evaluation of the degree of comprehension of material, and understanding of students' moods. Teacher lectures have always been delivered with accompanying body-motion behavior which may help or hinder the process of information transmission. A micro-analytic study

of teacher and student behavior patterns in the classroom context would reveal a great deal of information useful to the teacher. In addition, as Bateson pointed out, patterns of communication are also contexts for learning: for learning information and for learning about the communication of information. Micro-analysis of classroom behavior systems would show the relationships among learning and communication. Learning, when viewed as an interpersonal rather than as an intrapersonal process, might be understood in terms of perceptible communication behaviors and not solely in terms of psychological associations made privately and mysteriously in the individual's brain. Just as the NHI study brought the psychiatrists on the team to an understanding of personality, character, and temperament as socially patterned rather than genetically predetermined or absolutely intrapersonal, so also a study like the NHI performed on classroom materials could reveal the ways in which learning is an interpersonal activity.

Other applications could be made in the other applied communication fields. Applications to psychotherapeutic diagnosis and treatment were indicated in the NHI. Speech therapists and physical therapists could benefit from the frame-by-frame techniques of analysis of speech and body motion and description of synchronies and dissynchronies developed by such colleagues of the NHI team as William Condon. Micro-analytic observation of students, trainees, and other instructional media users could reveal useful information of the process of mediated learning. Finally, anyone involved in the management of groups of people could benefit from studies of group behavior patterns patterned after the NHI.

Perhaps the greatest usefulness of studies such as the NHI is the gift of a new way to think about educational inquiry and communicational processes. The idealized paradigm of "natural science" has dominated educational research for decades. The influence of social science is only beginning to be felt. As a result, educational researchers have assumed that processes of learning in the classroom must be studied in terms of individual behaviors and that analysis must be performed in terms of statistical summaries. Few studies have related social behaviors or communication patterns to the information to be transmitted, to information-transmission, or to retention of the information. Few instructional system designers have taken into account the fact that learners and teachers are working in each other's presence and engaged in a system of communication behaviors which relates them all. Diagrams of proposed instructional systems, as a result, often show "the learner", an individual, who is given access to mediated instruction and who must master certain material according to certain standards. Discussions of instructional systems often presuppose a hypothetical student who enters the wonderful world of mediated learning as if he were in isolation. This assumption of the individual learner is not the only possible assumption. The NHI study, and the viewpoint described in the chapter on "social" communication research, offer a second way to think about learners and teachers, and a second standpoint from which to conduct educational research.

Finally, the NHI study allows us to have a new appreciation of the richness of human and nonhuman social communication systems. The traditional communication model of sender-message-receiver implied one-way transmission of a message in a single medium. The alternative view of social communication as multi-level, multi-directional, multi-

modal, and richly meaningful provides an opportunity for awe. Just as biological organization has resulted in millions of species and the development of specialized sensory systems for communication, with each different manifestation of life contributing to the larger system of organism-and-environment, so also social species including humans have proliferated into thousands of language and social groups and developed a sensory network of communications involving far more than five senses.

This bio-social view of communication may reduce the grandeur of the concept of man as unique because he speaks -- but it leads to a prospect even more wondrous, of man as one of thousands of social species living within a global and universal context. There is room in this view for a God. It is only when man realizes that he is not God that the room becomes available.

CHAPTER EIGHT

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VITA

MARGARET RUTH ZABOR

Born on 26 November, 1948, Ms. Zabor attended Philadelphia schools including the Philadelphia High School for Girls. She entered the University of Pennsylvania in 1966 and majored in Sociology. Following student-teaching experiences at the Parkway Project and the Pennsylvania Advancement School, she taught eighth-grade social studies in New Jersey for one year. By 1971 she received both the BA and MS of Ed degrees. Up to that point, her primary interests were in social science and education.

A course taken with Dr. Ray Birdwhistell in 1970 led to a new interest in human communication. In 1971 she received a fellowship from the University of Hawaii's Department of Educational Communications and studied educational television and other instructional media through the NDEA Media Leadership program. In the summer of 1972 she taught courses to adult students through Honolulu Community College and the Operation Headstart Supplementary Training Program.

Returning to the east coast of the Mainland, Ms. Zabor worked as a volunteer at Eastern Pennsylvania Psychiatric Institute's Studies in Human Communication department. This research-and-training center had been one of the centers established by a member of the Natural History of an Interview team. While active research on the NHI had ceased by Autumn 1972, abundant research materials and the guidance of Jacques van Vlack, research cinematographer, led to intensive learning.

In January 1973, she began a PHD program at the Indiana University School of Education's Division of Instructional Systems Technology, hoping to further explore her interests in communication and education. She received a two-year fellowship. Part-time employment included a graduate assistantship in the Audio-Visual Center; a graduate assistantship with a professor in the Philosophy of Education department; and three research assistantships. One of these involved analysis of classroom interaction in "normal" and "special education" classrooms. Two others entailed transcriptions of natural speech, using indications of intonation patterns and regular English orthography.

In 1974 she visited the University of Chicago as a CIC Traveling Scholar for courses with Drs. Norman McQuown, Starkey Duncan, and Victor Yngve. Her focus at this time was nonverbal communication. The course with Dr. McQuown focussed on the Natural History of an Interview study. She returned to the University of Chicago in 1976 for a one-year master's program in the Social Science Division, concentrating on linguistics and working with the NHI materials. In the summer of 1977 she attended the Summer Institute of Linguistics held in Norman, Oklahoma for the second-year course in descriptive tagmemic linguistics.

Ms. Zabor identifies herself as a human communication researcher in general and a fledgling kinesicist specifically. She will serve in Thailand with the Peace Corps for several years and by becoming familiar with the speech and body motion of a different social group, obtain the contrast necessary for perception of her own group's speech and body motion patterns.